CLARK OIL AND REFINING

GUARD BASIN AND LIME PITS SAMPLING AND ANALYSIS PLAN

NOVEMBER 1992

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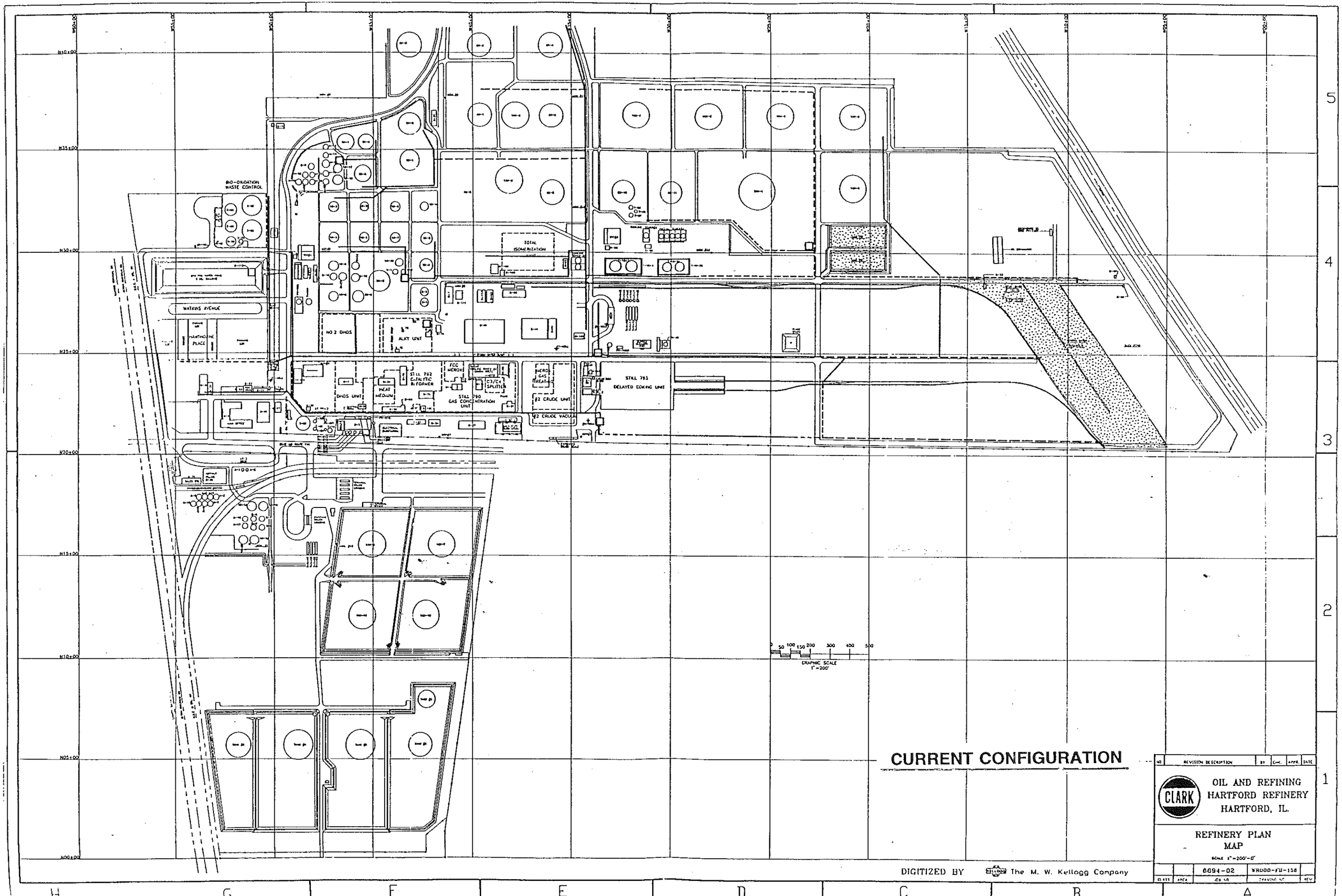
GUARD BASIN AND LIME PITS SAMPLING AND ANALYSIS PLAN

APPENDICES

1.0 INTRODUCTION

The Clark Oil and Refining Hartford Refinery (Clark Oil) located in Hartford, Illinois operates surface impoundments where wastewater and stormwater treatment sludges are generated. These impoundments are identified as the Guard Basin and the Lime Pits. These impoundments may receive oily wastewater during dry weather periods and generate the hazardous waste stream - Primary Sludge (F037 and F038). Clark Oil has prepared this Sampling and Analysis Plan to provide procedures for sampling and analysis of the sludges contained in the Guard Basin and Lime Pits and to determine whether waste constituents have been released from these units. The location of the impoundments is shown on Figure 1.

The sludges contained in the impoundments will be evaluated for purposes of waste management, disposal or re-use. Based on the findings of this program, closure alternatives and a closure plan will be prepared for the impoundment. The quantity of sludge and affected soils associated with each of the impoundments will be estimated. This plan also describes the procedures to characterize potentially affected soils and groundwater in the area of these impoundments. The hydrogeology of the area around the Guard Basin and Lime Pits will be characterized during this program and groundwater samples will be obtained for analysis. The findings of the program will be summarized in the final report with a discussion of the condition of the soils and groundwater in the area of the impoundments.



CURRENT CONFIGURATION

DIGITIZED BY The M. W. Kellogg Company

NO	REVISION DESCRIPTION	BY	CHK.	APPR.	DATE

CLARK

OIL AND REFINING
HARTFORD REFINERY
HARTFORD, IL.

REFINERY PLAN
MAP

SCALE 1"=200'-0"

CLASS	APPR.	6894-02	WR000-PM-158	REV.
		JOB NO.	DRAWING NO.	

H G F E D C B A

5 4 3 2 1

BIO-OXIDATION WASTE CONTROL

WATKINS AVENUE

HAWTHORNE PLACE

NO 2 DHDS

ALKY UNIT

TOTAL ISOMERIZATION

DHDS UNIT

HEAT MEDIUM

STILL 782 CATALYTIC REFORMER

STILL 780 GAS CONCENTRATION UNIT

C3/C4 SPLITTER

#2 CRUDE UNIT

#2 CRUDE VACUUM

STILL 783 DELAYED COKING UNIT

⊕ - Well Locations

GRAPHIC SCALE
1" = 200'

CURRENT CONFIGURATION

DIGITIZED BY The M. W. Kellogg Company

NO	REVISION DESCRIPTION	BY	CHK	APPR	DATE

CLARK

OIL AND REFINING
HARTFORD REFINERY
HARTFORD, IL.

REFINERY PLAN
MAP

SCALE 1" = 200'-0"

		6694-02	WR000-FW-158	
CLASS	AREA			REV

4306000m N.

1 100 000 FEET (MO.)

4305

4304

4303

4302

4301

7961 I SW (COLUMBIA BOTTOM)

WOOD RIVER

Lincoln Sch

Washington Sch

Post Office

OIL REFINERY

Central Sch

Trailer Park

High Sch

Burbank Sch

Roxana

Oil Cooling Reservoir

Settling Basin

OIL REFINERY

Hartford

South Roxana

Wanda

Wanda Cem

Springlea Cem

Smith Cem

Sanders Cem

Drive-In Theater

Pumping Station

Substa

Oil Tanks

Oil Tank

Pit

Mile 198

Mile 1

ILLINOIS

MISSOURI

MADISON CO.

ST. CHARLES

MISSISSIPPI RIVER

NORMAL POOL ELEVATION 398

DES PLAINES RIVER

MOBILE PORTAGE

SIOUX ISLAND

Chanute Wood

Old Channel

ILLINOIS CENTRAL GULF

PENN CENTRAL

CHICAGO AND EASTERN ILLINOIS

FERGUSON AVE

CENTRAL AVE

FORT

Indian Creek

29 28 27 26 25 30 31 32 33 34 35 36

1 2 3 4 5 6 7 8 9 10 11 12

4 N

T 3 N

R 10 W

R 9 W

2.0 IMPOUNDMENT SAMPLING PLAN

This plan details procedures which will be used to sample the sludges contained within the Guard Basin and Lime Pits and evaluate potential treatment or re-use alternatives. Alternatives which are being considered include: stabilization and on-site encapsulation, stabilization and off-site disposal, re-use as a fuel substitute, treatment for recovery of oil and biological treatment. Samples will be collected and analyzed for parameters which will assist in evaluation of the suitability of these various technologies.

2.1 Sampling Locations

Clark Oil proposes to sample and test sludges from the impoundments in order to estimate the volume of sludge and evaluate potential treatment or re-use alternatives. Samples will be obtained from random locations within the impoundments. The locations will be selected by establishing a grid on 35 foot centers and using randomly generated numbers to select the sample locations. If a selected location is inaccessible or presents unnecessary hazards to the sampling team, it will be discarded and another selected.

Clark is proposing to obtain samples for analysis at thirty locations within the Guard Basin and fifteen locations within the Lime Pits. These locations will provide representative samples from each impoundment. The samples obtained at each location will include material from the sludge/water interface to the depth at which a hard bottom is reached. It is anticipated that the impoundments may extend to as much as fifteen feet below grade. This method will collect samples which take into account the vertical variations or layering of the material.

Samples will be collected for chemical and physical analysis as well as stabilization testing and testing to evaluate potential recovery or re-use alternatives. Some preparation of the samples in the field may be appropriate to ensure that the samples are representative. Preparation may include allowing some of the sludge to settle and removing excess water prior to shipping the samples to the laboratory.

2.2 Selection of Test Parameters

Clark Oil is proposing that samples be tested to evaluate the following technologies: stabilization and on-site encapsulation, stabilization and off-site disposal, re-use as a fuel substitute, treatment for recovery of oil and biological treatment. The preferred disposition of the sludge will include re-use or oil recovery. Currently the re-use options which appear to hold potential include the use of the de-watered sludge as a fuel substitute and solvent extraction of oil contained in the sludges. Testing to evaluate the heat content and the quantity of recoverable oil contained in the sludges will be conducted. The test parameters listed below are included to evaluate the options discussed and other options may be discovered based on the sludge analysis.

Clark Oil will test samples of the sludges contained in the impoundment for the following:

ANALYTICAL PARAMETERS	NUMBER OF SAMPLES
FUEL CHARACTERISTICS	
Oil/Water/Solids/Ash	24
Heat Content (BTU/lb)	24
Halogen Content	24
Metals	24
RECOVERABLE OIL CONTENT	
Oil/Water/Solids	* included above
WASTE CONSTITUENTS	
Skinner List Constituents	3
Toxicity Characteristics	3
WASTE STABILIZATION	
Oil/Water/Solids	* included above
Stabilization Testing	3
Toxicity Characteristics	1
BIOLOGICAL TREATMENT	
Nutrients (N-P-K)	3

The Oil/Water/Solids/Ash test will be used to determine the water content, the extractable oil content, the total solids content and the non-volatile solids content of the sludges. The procedure used to conduct this test is specifically designed to evaluate sludges for re-use and stabilization options. This test uses a combination of EPA SW-846 Test Methods for Method for Evaluating Solid Waste and American Society of Testing and Materials (ASTM) methods. The Oil test is SW-846 Method 9071; the Water test is ASTM Method D-95; the Solids test requires a solvent removal of the oil and water, filtering and gravimetric determination of solids content; and the Ash test requires heating the sample to 500° to drive off all other fractions.

The heat content of the sludges will be determined using a Parr Bomb calorimeter. The bomb test will also be used in evaluating the halogen content when combined with the ASTM Test Method D-808. The metals in the sludges will be determined using the EPA Method 7191 and Method 7421 described in the EPA document SW-846.

Analysis for the Skinner List constituents will be conducted by an EPA approved laboratory using the protocol provided in the most current revision of the EPA document SW-846. A list of the constituents included in the Skinner List is provided in Appendix No. 3.

The Toxicity Characteristics (TC) procedure includes extraction using the TCLP and analysis for metals and organics. The protocol is included in the Federal Register dated August 2, 1990.

The stabilization testing procedure will be conducted in the Brown and Caldwell laboratories in California. Stabilization agents (cement kiln dust and boiler flyash) will be mixed with the de-watered sludges and allowed to cure. The strength of the stabilized mixture will then be tested using a pocket penetrometer or vane type shear strength testing device. These methods are commonly used to evaluate soils during geotechnical investigations.

2.3 Sampling and Volume Estimation Procedures

Samples of the impoundment sludges will be collected at locations selected using the procedures described above. The thickness of sludge will be determined at each of the sample locations. Sampling may have to be conducted from boats, though other methods will be investigated. Other potential methods include using a dredge hoisted by a crane or a by a sampling crew hoisted in a basket by a crane. It may be possible to collect some samples from the bank of the impoundments or from existing structures. The sampling method selected will ensure that representative samples are collected. While gathering the samples, soundings of the impoundment bottom and sludge thickness will also be obtained.

Sludge samples will be obtained using a dredge or by pushing a section of two inch diameter PVC pipe through the sludge until a hard bottom is reached. At each location, the depth that sludge was first encountered and the total depth will be recorded in the field log. The sampling device or section of pipe will be retrieved and the sludge and water removed. The sampling team will remove as much of the water as possible and place only the sludge in the sample containers. The solids which remain suspended can be treated or removed in the wastewater treatment system so the sampling will focus on the denser sludges.

The volume of sludge will be estimated by determining an average depth in each section of the impoundments and multiplying by the area of that section. Factors will be developed to estimate the volume which the sludge will occupy when de-watered.

3.0 SOIL AND GROUNDWATER SAMPLING PLAN

Clark Oil is proposing to obtain soil samples and install groundwater monitoring wells in the area of the impoundments to determine whether waste constituents have been released to the environment. The soil samples will be obtained while installing the monitoring wells. The location of the monitoring wells will be determined based on local groundwater flow patterns. Clark Oil will attempt to locate the wells so that there are at least one up gradient and three down gradient wells at each impoundment.

3.1 Sampling Locations

Sampling locations will be selected based on the assumed direction of groundwater flow. Eight sampling locations are proposed with at least three locations down gradient of each impoundment. The soil samples will be obtained at the locations selected for installation of the monitoring wells. The investigation will attempt to determine the lateral extent of any constituents which may have migrated from the units.

Soil Sampling

Clark Oil proposes to sample and test soils from the area near the impoundments in order to determine whether waste constituents have been released from the impoundments. Soil sampling will be conducted at locations selected for installation of groundwater monitoring wells. The borings will be continuously sampled for geological logging and to identify strata which may be affected by releases. Samples will be taken for laboratory analysis at varied depths in order to determine the vertical extent of the released material. Two soil samples will be taken from each boring location. The samples will be taken at those depths which appear to have the most potential to contain waste constituents. The determination of sample depth will be based on field evaluation of the soil cores.

The soil cores will be visually observed in the field for evidence of waste constituents which may have been released from the impoundments. The cores will also be scanned using an Organic Vapor Analyzer (OVA) or other device which can detect organic vapors and provide indicators of waste constituents. The soil cores which appear to have the highest concentrations of waste constituents will be selected for analysis. The soil cores will be examined in the field by a Professional Geologist who will log the soil classification based on the Unified Soil Classification System. The geologist will also record observations regarding visual or olfactory evidence of waste constituents in the soils

The drawing of the impoundments included in Appendix No. 1 shows the proposed sample locations. The sample locations selected are based on the expectation that groundwater flow from the area of the impoundments is toward the Mississippi River.

Groundwater Sampling

Clark Oil is proposing to install groundwater monitoring wells in the uppermost aquifer located down gradient of the impoundments to determine whether releases to groundwater have occurred. The proposed locations for the monitoring wells are provided in Appendix

No. 1. Groundwater monitoring well installation and development procedures are provided in Appendix No. 2. Monitoring well sampling procedures are provided below.

3.2 Selection of Test Parameters

Clark Oil is proposing that Total Petroleum Hydrocarbons (TPH), lead, chromium, benzene, ethylbenzene, toluene and xylene (BETX) be used as indicators of releases from the impoundments. The Petroleum Hydrocarbon analysis is capable of detecting the "oil" which is processed at the facility. The specific compounds listed above are those which are frequently identified as being present in refinery waste streams. Soil and groundwater samples will be analyzed for the same set of parameters.

A total of 16 soil samples are proposed to be analyzed for TPH, chromium, lead and BETX. Also 2 composite soil samples will be analyzed for the Skinner List constituents[1]. These samples are also intended to define the limits of the contamination (if any) and delineate those areas which have not been affected by releases.

TABLE I
SAMPLE PARAMETER SUMMARY

SOIL SAMPLES

	TPH	Metals	BETX	Skinner
Grab Samples	16	16	16	0
Composite Samples	0	0	0	2

WATER SAMPLES

	TPH	Metals	BETX	Skinner
Groundwater	8	8	8	0
Equipment Blanks	0	1	1	0

*BETX - Benzene, Ethylbenzene, Toluene and Xylene
*TPH - Total Petroleum Hydrocarbon

[1] *The Skinner List is taken from the EPA manual "Guidance Document for Delisting of Refinery Waste" and is included in Attachment 2*

Sample Analysis

The soil samples will be subjected to laboratory analysis for Petroleum Hydrocarbons, chromium, lead and BETX. Chemical analysis will be conducted by a laboratory approved by the EPA using the protocol provided in the most current revision of the EPA document SW-846.

Laboratory Testing of Samples and Quality Assurance and Quality Control (QA/QC)

The EPA approved testing laboratory will follow the EPA SW-846 testing protocol. Clark Oil will require that the testing laboratory follow the laboratory procedures set forth in EPA's Test Methods for Method for Evaluating Solid Waste, and Methods for Chemical Analysis of Water and Waste or procedures approved by the EPA Regional Administrator.

The Petroleum Hydrocarbon test is EPA method 418.1 and is referenced in EPA 600/4-79-020. Total Chromium and Total Lead content will be tested for using EPA Method 7191 and Method 7421 described in the EPA document SW-846.

The soil samples will also be tested for the presence of four volatile organic compounds, benzene, ethylbenzene, toluene and xylene. The soils will be tested using the procedures outlined in SW-846 Method Number 8240 "GC/MS for Volatile Organics". Analysis for the Skinner List constituents will be conducted using the SW-846 protocol. A list of the constituents included in the Skinner List is provided in Appendix No. 3.

The QA/QC program must include the following checks to ensure date validity:

1) Chain-of-custody completion;

2) Sample handling procedures after sample shuttles are received;

3) Completion of Laboratory Logbook;

4) Analytical procedures used;

5) Reporting of Low and Zero Concentration Values (detection limits);

7) Procedures for handling missing data;

8) Statistical procedures used on Outliers and detection limit values;

9) Procedures used for reporting units of measurement and methods used in finding ambiguous and incorrectly reported values; and

10) Methods used in tracking sample results and final laboratory reports.

3.3 Soil Sampling Procedures

Soil samples will be obtained while installing the groundwater monitoring wells. The wells will be installed using a hollow-stem auger drilling rig and the soil samples will be collected in advance of the drill auger using shelby tubes or split spoon samplers. Samples for geological classification will be obtained continuously in front of the drill bit. The individual soil samples selected for analysis will be placed in separate clean glass jars and labeled in accordance with the procedures presented in this section.

Grab samples will be taken for TPH, metals, BETX and the Toxicity Characteristics (TC) and composite samples will be analyzed for the Skinner List constituents. Most samples will be grab samples in order to minimize the handling of each sample and to eliminate any potential dilution of samples caused by compositing.

Composite samples to be analyzed for the Skinner List Constituents will be homogenized prior to placing them in sample bottles. Homogenation will be accomplished by thorough mixing of the sample in a stainless steel bowl using a stainless steel spoon. After initial mixing, the sample will be quartered, mixed, re-combined and thoroughly mixed again. The homogenizing bowl and spoon as well as hand augers will be decontaminated between each sample collection. For the volatile portion, small samples obtained at each location will be placed in the sample bottle (VOA) and the cap replaced between locations. This procedure will minimize loss of the volatile organic compounds which may occur if the samples are exposed to the atmosphere while compositing. The samples obtained for organic constituent analysis will be placed in coolers and maintained at 4°C until delivered to the laboratory.

Decontamination Procedures

The shelby tube or other sampling device used to procure the soil samples and the sample mixing equipment will be decontaminated prior to the collection of each sample. The decontamination procedure will include:

1) the removal of soil and debris from the shelby tube or split spoon sampler and other equipment,
2) washing of the equipment with detergent and water,
3) rinse with distilled water, followed by
4) rinse with a 50 percent methanol, 50 percent distilled water solution and
5) final rinse with distilled, deionized water.

A sample of the final rinse water will be collected during one of the decontamination events to document the effectiveness of the procedure. The wash water (Equipment Blank) will be analyzed for the same parameters which the soil samples will be tested for.

Field Sampling Records

The sampling team will keep complete records of their activities and observations during the sampling operations. These records will include at a minimum:

- a sample number, unique to each sample location and sample depth;
- the time and date at which each sample was taken;
- the vertical depth each sample was taken from;
- any observations made about the sample or the sample location; and
- any unusual visual or olfactory observations made about the sample or the sample location, including the presence of free hydrocarbons;
- soil classification according to USCS; and
- the name(s) of the sampling personnel.

Sample Labeling

The sampling team will accurately and clearly label each sample taken during the sampling operations. These records will include at the minimum:

- a sample number, unique to each sample location and sample depth;
- the time and date at which each sample was taken;
- the vertical depth each sample was taken from;
- the name of the sampling personnel and project name;and
- parameters to be tested by the laboratory.

3.4 Groundwater Sampling Methods

Groundwater sampling will be conducted after the monitoring wells have been installed and developed. Procedures for well installation and development are provided in Appendix No. 2. As part of the groundwater monitoring, the groundwater gradients will be determined by measuring the static water level (potentiometric surface) in each well within a period of one hour. If floating hydrocarbons are detected in a well, the thickness of the hydrocarbon layer will be measured. The water level will be determined in each well and used to calculate the volume required to be purged from each well.

The static water level and total depth will be determined in each of the monitoring wells and one of the following conversion factor will be used to determine the volume of standing water in each well (depending on casing size):

Casing Diameter	Gallons/Linear Foot
2"	0.16
4"	0.65
6"	1.47

Well Purging Procedures

Each well will be purged three to five well volumes prior to sampling. Each well volume will be calculated and then multiply by 3 or 5 to determine the volume of water to be removed. The volume of purged water will be measured by counting the number of bailers full of water which have been removed or the number of 5 gallon buckets filled while bailing. The purged water will be collected into 55 gallon drums and taken to an appropriate location for treatment. The groundwater monitoring wells will be ready to sample when successive bailed samples meet the following criteria: the temperature changes by less than 1° C, the pH falls within 0.2 su and the conductivity varies less than 10 percent. Otherwise the well will be bailed dry three times prior to sampling. The groundwater monitoring wells will be sampled with a teflon or stainless steel bailer. These samples will be placed in clean containers and labeled in accordance with the procedures presented in this section.

Sampling Procedure

The water level within the well should be determined prior to taking the samples which will be sent to the laboratory for analysis. A clean teflon or stainless steel bailer will be used to obtain the groundwater sample from each well. Previously cleaned teflon or stainless steel bailers will be brought to the site by the sampling team. The first bailer full of water will be discarded. The samples will be placed in laboratory prepared sample containers. Some of the sample containers may contain preservatives added at the laboratory. Samples obtained for metals analysis should be filtered prior to placing them in the prepared sample container. Filtration will be through 0.45 micron filter paper which should be replaced between each well. The forms provided in Appendix No. 4 will be completed for each well which is sampled.

Sampling Equipment Decontamination Procedures

The teflon or stainless steel sampling bailers will be cleaned under the following procedures following each sampling event:

1) Each Bailer will be washed and scrubbed with soap and water,
2) The bailer will be rinsed with distilled, deionized water,
3) Each Bailer will be rinsed with a 50 percent methanol, 50 percent distilled water solution,
4) Then each Bailer will be rinsed with distilled, deionized water.
5) The water level sensing and filtering devices will be rinsed with distilled, deionized water.

All purged well water and wash waters will be collected and disposed of at an appropriate location.

Field Sampling Records

The sampling team will keep complete records of their activities and observations during the sampling operations on the forms provided in Appendix No. 4. These records should include at the minimum :

- a sample number unique to each groundwater monitoring well;
- the initial depth to water in each groundwater monitoring well and the time of water level measurement;
- the depth to water in each groundwater monitoring well when sampled for analysis and the time of water level measurement;
- any unusual visual or olfactory observations made about the sample or the sample location, including the presence of floating hydrocarbons; and
- the time and date at which each sample was taken;
- the name(s) of the sampling personnel.

Sample Labeling

The sampling team should accurately and clearly label each sample taken during the sampling operations. These records should include at the minimum:

- the time and date at which each sample was taken;
- the groundwater monitoring well each sample was taken from;
- parameters to be tested for, and
- the name of the sampling personnel.

Sample Preservation

Samples will include soil and groundwater which may require that preservatives be added; in addition to added preservatives, all samples will be placed in coolers using ice to maintain an internal temperature of approximately 4° Celsius (°C). Preservatives will be added to each groundwater sample as necessary. Water samples in the form of Equipment and Field Blanks will be preserved in the same manner as the groundwater samples. The sample coolers will be checked daily until all samples are delivered to the laboratory to assure that the ice is adequately cooling the samples. The samples will be delivered to the laboratory with sufficient time to ensure that they can be analyzed within the holding times listed in Appendix 3. The original copy of the chain of custody will be sent to the laboratory along with the samples.

Chain of Custody Procedures

All sample containers will be sealed and labeled prior to placing them into coolers for transport to the laboratory. Appropriate information for each container will be logged onto a Chain of Custody (COC) form which will accompany the samples to the laboratory. The COC will include the name of the sample, type of sample (grab or composite) and the

analysis to be performed on that sample. The completed COC will be signed by the sampler and turned over to a delivery service or directly to the analytical laboratory after it has been signed.

A sample number unique to each sample and a sample description will be logged onto a chain of custody form. In addition the following information will be entered onto the chain of custody form:

- Date & Time sample collected;
- Sampler(s) Name and Signature;
- Number of Sample Containers for each groundwater monitoring well or sample location;
- Sample Relinquishing Signature(s) with Date(s) and Time(s); and
- Temperature of Sample Shuttle upon receipt by laboratory.

4.0 HEALTH AND SAFETY MEASURES

The minimum safety equipment of the field team will consist of hard hats, steel toed boots, rubber gloves and safety glasses, which will be worn by all field personnel as necessary. Personnel who may be exposed to hazardous wastes or may be required to wear a respirator will have appropriate training as required under 29 CFR 1910. A detailed safety procedure plan for the Site Investigation will be prepared prior to initiating field activities.

5.0 SCHEDULE & INVESTIGATION REPORT CONTENTS

This Sampling and Analysis Plan proposes a program to gather sufficient information to evaluate sludge management alternatives and determine if there has been a release of waste constituents from the Guard Basin and Lime Pits. The results of the study will be used to develop an environmentally sound closure plan for these impoundment.

5.1 Project Schedule

The implementation of the field investigation, laboratory testing and preparation of the project report is estimated to require 13 weeks. This schedule assumes the identification of sampling locations will require one week, the collection of sludge samples will require two weeks, installation of monitoring wells and soil sampling will require two weeks, testing and chemical analysis of samples will require four weeks, review and interpretation of the laboratory data will require two weeks, and the preparation of the final report will require two weeks.

5.2 Investigation Report

The objective of the investigation report will be to determine:

1) The volume of sludge contained in the impoundments;

2) What are the chemical and physical characteristics and waste classifications for the sludges and affected soils;

3) Whether the soils around the Guard Basin and Lime Pits have been affected by a release;

4) To what depth and direction the soils have been affected;

5) Whether the groundwater in the area of the impoundments has been affected;

6) The geologic and hydrologic conditions in the area of the impoundments;

The report will contain the results of chemical analysis of the sludges and an estimate of the volume contained within the impoundments. The analysis of soils and groundwater will be evaluated to determine whether waste constituents have been released from the impoundments. The hydrogeology of the area around the Guard Basin and Lime Pits will also be characterized to assist in evaluation of on-site waste management alternatives.

APPENDIX NO. 1

FACILITY DRAWING AND SAMPLE LOCATIONS

APPENDIX NO. 2

WELL INSTALLATION
AND
DEVELOPMENT PROCEDURES

MONITORING WELL INSTALLATION PROCEDURES

1. Daily Procedures
    a. Obtain work permit from Unit Foreman

    b. Check safety gear and conduct tailgate safety meeting before beginning work

2. Soil Sampling Activities

    a. Setup drill rig over pre-selected boring location

    b. Advance shelby tube or split spoon sampler 2 feet into soil

    c. Remove tube and extract sample

    d. Check sample for volatile organics using OVA

    e. Record OVA readings on core log or in field notebook with depth

    f. If elevated readings are detected using the OVA, retain the sample for chemical analysis

    g. Sampling according to the plan, a minimum of 2 samples per boring will be analyzed for BETX, lead, chromium and TPH. The objective is to obtain samples which represent worst case (ie. the highest level of contaminants). In order to do this, portions of the core will have to be preserved until the actual samples to be analyzed have been selected. The cores should be wrapped in foil and placed in a cooler until the two samples selected for laboratory analysis are selected. In the event that a sludge layer or a grossly contaminated zone is encountered, samples should be collected in approved bottles and kept cool as if they were to be sent for laboratory analysis. A sufficient volume of sample will be obtained, placed in proper containers and properly preserved in all cases.

    h. Each boring location will be sampled continuously until the desired depth is reached. At each significant lithologic break, samples will be obtained for field classification. This sampling will not interfere with obtaining samples for chemical analysis. Necessary information for the cores includes:
        - USCS soil type
        - USCS color
        - texture
        - mineral composition
        - moisture content
        - grain size distribution

i. Prepare log of core using USCS colors and nomenclature

j. Drill until time to obtain next undisturbed soil sample

k. Repeat steps b through j

l. The cuttings generated during the drilling will be placed in drums for storage until they can be characterized for proper disposal. If core samples indicate high levels of contaminants at the current drilling depth, cuttings will be placed in specially marked drums

m. If no contamination is indicated by the OVA, cuttings will be placed in drums labeled uncontaminated materials

n. The borings are to be converted into 2 inch diameter PVC monitoring wells. The monitoring wells will be installed in the first water bearing zone. Well installation procedures are intended to allow collection of representative samples of groundwater in the area of the impoundments.

3. Well Installation and Development Activities

a. Using procedures described above, drill through the uppermost aquifer and approximately three (3) feet below it into the underlying clay or shale. If after reviewing existing borehole logs of the immediate area and evaluating samples taken while drilling the borehole, it is determined that extended screening above or below formation of interest will possibly be near another water bearing zone, i.e. a very thin but effective clay layer above or below the zone of interest, the well screen will be installed to screen only the exact thickness of the zone of interest. Note the thickness of the zone to be screened. Use a stem auger drill bit size that will result in an annulus of at least 2.5 and preferably 3 inches between the borehole wall and the well casing to allow installation of gravel/sand pack, bentonite pellets and grout.

b. Casing and screen materials will be selected with consideration to geochemistry, anticipated lifetime of the monitoring program, well depth, chemical parameters to be monitored and other site specific factors. PVC screen and casing with flush thread connections is proposed for this location. Appropriate well screen length will be chosen so that the screen extends approximately one foot above the zone to be screened if it is confined and one foot below the zone. If the zone to be screened is under water table conditions, the well screen will extend several feet above the water table to allow for seasonal fluctuations and one foot below the zone.

c. Screen length will be calculated and cut from the internally threaded female end. Over this end a special slip coupling fitted with a backwash valve will be placed, unless Clark Oil has requested a common slip cap. A 0.25 inch hole will be drilled through the cap or coupling and the screen inside it in two or more places. A precut

0.25 inch PVC peg will be driven into the holes to secure the cap or coupling in place. Appropriate lengths of the desired diameter casing will be attached to the custom fabricated well screen of the same diameter so that the top of the casing extends approximately 2 1/2 feet above the ground.

d. The filter pack will be installed around the screened interval and two (2) feet above it if the water bearing zone is under water table conditions or if it is overlain be a thick clay or shale. If the water bearing zone is confined and overlain by a very thin clay or shale (as noted in an exception earlier in this document) and only the exact thickness of the zone has been screened, then the filter pack will be placed level with the top of the screen. The filter pack will be chemically inert (e.g., clean quartz sand, silica, or glass beads), well rounded, and dimensional stable.

e. Seal the annular space using bentonite pellets or a bentonite slurry which will prevent the migration of contaminants to the sampling zone from the surface or intermediate zones and prevent cross contamination between strata. The materials will be chemically compatible with the anticipated waste to ensure seal integrity during the life of the monitoring well.

f. The well casing will be vented. The backwash valve will not be used again and when the protective casing is installed, access to the inner casing for venting will be difficult.

g. Above the initial annular seal material of bentonite, a cement and bentonite grout mixture will be used up to just below the surface. Any remaining annular space will be filled with concrete blending into a four-inch thick apron extending three (3) feet or more from the outer edge of the borehole. Since PVC casing will be used, steel casing will be installed around the "in hole" casing and cemented in place with this final cementing procedure. The protective casing will allow two (2) to five (5) inches of working space between the inner and outer protective casings. The protective casing will have as minimum specifications: 1) Hinge, 2) Hasp for lock, 3) Riser pipe within 6 inches of the top of the protective casing, 5) Will be painted if steel, and 6) Have the well# and the elevation permanently marked on the casing.

h. Upon completion of the well, installation of a suitable threaded cap or compression seal will be placed or locked in properly to prevent either tampering with the well or the entrance of foreign material into it. It is important that the protective well casing is also vented to the outside atmosphere to provide an avenue for the escape of gas, if this should be a problem now or in the future. Placement of concrete or steel bumper guards around the well will prevent possible damage to the well casing.

i. The proper forms will be filled out showing a diagram of the well and materials used in installation and a sketch map of the well location relative to some fixed landmark. Finally the well will be surveyed to show its elevation and exact location. The elevation and well number will be permanently placed on the well.

j. Decontaminate drill augers and sampling devices using steam cleaner. Additional decontamination procedures for sampling devices used to obtain soils for chemical analysis include:

- detergent wash
- water rinse (tap water)
- 50 percent methanol distilled water mixture spray rinse
- de-ionized water rinse

k. Set up at new drilling location - See step a of soil boring procedures.

l. Well development will be accomplished by bailing water from the completed well until clear water is obtained. This will normally require that at least ten well volumes are evacuated from the casing. The water evacuated from the well will be collected for disposal.

APPENDIX NO. 3

SAMPLE CONTAINER
AND
SAMPLE PRESERVATION
AND
SKINNER LIST CONSTITUENTS

SAMPLE PRESERVATION SUMMARY

RCRA

ORGANICS[9]

	CONTAINER[1]	PRESERVATION	HOLDING TIME[2]	SAMPLE VOLUME[3]
Volatile Organics (Methods 8010, 8020, 8240)				
Concentrated waste samples for volatiles	Wide-mouth jars, G Teflon lined cap	None	14 days	8 oz.
Liquid samples for volatiles				
No Residual Chlorine	G, Teflon lined septum	Cool, 4°C, 4 drops [HCl]	14 days	2 x 40 ml
Residual Chlorine	G, Teflon lined septum	Collect in 4 oz. VOA container, preserved with 10% $Na_2S_2O_3$[4], mix & transfer to 40 ml vial/4 drops [HCl], Cool, 4°C	14 days	2 x 40 ml
Acrolein and Acrylonitrile (Method 8030)	G, Teflon lined septum	Cool, 4°C, Adjust pH to 4-5[6]	14 days	2 x 40 ml
Soil/Sediment & Sludge samples for volatiles	Wide-mouth jars, G Teflon lined cap	Cool, 4°C	14 days	4 oz.
Semi-volatile Organics (Methods 8040, 8060, 8080, 8090, 8100, 8120, 8140, 8150, 8240, 8250, 8270, 8280)				
Concentrated waste samples for semi-volatiles	Wide-mouth jars, G Teflon lined cap	None	14 days to extraction, 40 days after extraction	8 oz.
Liquid samples for semi-volatiles				
No Residual Chlorine	G, Amber, Teflon lined cap, 1 gal. or two ½ gal.	Cool, 4°C	7 days to extraction, 40 days after extraction	1 gallon
Residual Chlorine	G, Amber, Teflon lined cap, 1 gal. or two ½ gal.	Add 3 ml 10% $Na_2S_2O_3$[4] per gal., Cool, 4°C	7 days to extraction, 40 days after extraction	1 gallon
Soil/Sediment & Sludge samples for semi-volatiles	Wide-mouth jars, G Teflon lined cap	Cool, 4°C	14 days to extraction, 40 days after extraction	8 oz.

INORGANICS[9]

Metals (except Chromium VI and Mercury)	P/G	pH < 2,/HNO_3	6 months	600 ml
Chromium VI	P/G	Cool, 4°C	24 hours	400 ml
Mercury	P/G	pH < 2,/HNO_3	28 days	400 ml

NOTES

1. Polyethylene (P) / Glass (G).
2. Holding Time given is the MAXIMUM time that a sample may be held prior to analysis and still be considered as valid.
3. Does NOT include additional volumes necessary for laboratory Quality Control (QC) analyses.
4. Use ONLY in the presence of residual chlorine.
5. When sulfide is present, the maximum holding time is 24 hours.
6. If ACROLEIN is not being measured, then the pH adjustment is not required. If acrolein is being measured, but the pH is not adjusted, then the analysis must be performed within three days of sampling.
7. Holding Time is based upon the date of RECEIPT at the laboratory.
8. US EPA, *Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act*, 40 CFR 136, October 26, 1984.
9. US EPA, *Test Methods for Evaluating Solid Waste*, SW-846, 3rd Edition, November, 1986.

GROUNDWATER MONITORING

DRINKING WATER SUITABILITY

Arsenic	P/G	pH <2,/HNO_3	6 months	200 ml
Barium	P/G	pH <2,/HNO_3	6 months	200 ml
Cadmium	P/G	pH <2,/HNO_3	6 months	200 ml
Chromium	P/G	pH <2,/HNO_3	6 months	200 ml
Lead	P/G	pH <2,/HNO_3	6 months	200 ml
Mercury	P/G	pH <2,/HNO_3	28 days	200 ml
Selenium	P/G	pH <2,/HNO_3	6 months	200 ml
Silver	P/G	pH <2,/HNO_3	6 months	200 ml
Coliform, Total	P/G sterile	Cool, 4°C, 0.008% $Na_2S_2O_3$[4]	6 hours	200 ml
Pesticides:				
Endrin	G, Teflon lined septum	Cool, 4°C	7 days to extraction, 40 days after extraction	2000 ml
Lindane	G, Teflon lined septum	Cool, 4°C	7 days to extraction, 40 days after extraction	2000 ml
Methoxychlor	G, Teflon lined septum	Cool, 4°C	7 days to extraction, 40 days after extraction	2000 ml
Toxaphene	G, Teflon lined septum	Cool, 4°C	7 days to extraction, 40 days after extraction	2000 ml
Herbicides:				
2,4-D	G, Teflon lined septum	Cool, 4°C	7 days to extraction, 40 days after extraction	2000 ml
2,4,5-TP (Silvex)	G, Teflon lined septum	Cool, 4°C	7 days to extraction, 40 days after extraction	2000 ml
Fluoride	P	pH <2,/HNO_3	28 days	300 ml
Nitrate (as N)	P/G	Cool, 4°C, pH <2,/H_2SO_4	28 days	1000 ml
Gross Alpha	P/G	pH <2,/HNO_3	6 months	1 gallon
Gross Beta	P/G	pH <2,/HNO_3	6 months	1 gallon
Radium 226	P/G	pH <2,/HNO_3	6 months	1 gallon
Radium 228	P/G	pH <2,/HNO_3	6 months	1 gallon

GROUNDWATER QUALITY

Iron	P/G	pH <2,/HNO_3	6 months	200 ml
Manganese	P/G	pH <2,/HNO_3	6 months	200 ml
Sodium	P/G	pH <2,/HNO_3	6 months	200 ml
Chloride	P/G	Cool, 4°C	28 days	50 ml
Phenols	G	Cool, 4°C, pH <2,/H_2SO_4	28 days	500 ml
Sulfate	P/G	Cool, 4°C	28 days	50 ml

CONTAMINATION INDICATOR PARAMETERS

Specific Conductance	P/G	Cool, 4°C	28 days	100 ml
pH	P/G	Cool, 4°C	Analyze immediately	25 ml
Total Organic Carbon (TOC)	G, Amber Teflon lined cap	Cool, 4°C, pH <2,/HCl	28 days	4 x 25 ml
Total Organic Halogen (TOX)	G, Amber Teflon lined cap	Cool, 4°C, add 1 ml 1.1 M sodium sulfite[4]	28 days	4 x 100 ml

UNDERGROUND STORAGE TANKS

Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	G, Teflon lined septum	Cool, 4°C, 0.008% $Na_2S_2O_3$[4], pH <2,/HCl	14 days	2 x 40 ml
Hydrocarbon Characterization	G, Teflon lined cap	Cool, 4°C	7 days to extraction, 40 days after extraction	2000 ml

NOTES

1. Polyethylene (P) / Glass (G).
2. Holding Time given is the MAXIMUM time that a sample may be held prior to analysis and still be considered as valid.
3. Does NOT include additional volumes necessary for laboratory Quality Control (QC) analyses.
4. Use ONLY in the presence of residual chlorine.
5. When sulfide is present, the maximum holding time is 24 hours.
6. If ACROLEIN is not being measured, then the pH adjustment is not required. If acrolein is being measured, but the pH is not adjusted, then the analysis must be performed within three days of sampling.
7. Holding Time is based upon the date of RECEIPT at the laboratory.
8. US EPA, *Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act*, 40 CFR 136, October 26, 1984.
9. US EPA, *Test Methods for Evaluating Solid Waste*, SW-846, 3rd Edition, November, 1986.

Skinner Analysis;[1]

Metals:
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Lead
Mercury
Nickel
Selenium
Vanadium

Volatiles:

Benzene
Carbon Disulfide
Chlorobenzene
Chloroform
1,2-Dichloroethane
1,4-Dioxane
Ethyl benzene
Ethylene Dibromide
Methyl ethyl ketone
Styrene
Toluene
Xylene

Semivolatile Base/Neutral Extractable Compounds:

Anthracene
Benzo(a)anthracene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(a)pyrene
Bis(2-ethylhexyl) phthalate
Chrysene
Dibenz(a,h)acridine
Dibenz(a,h)anthracene
Dichlorobenzenes
Diethyl phthalate
7,12-Dimethylbenz(a)anthracene
Dimethyl phthalate
Di(n)butyl phthalate
Di(n)octyl phthalate
Fluoranthene
Indene
Methyl chrysene
1-Methyl naphthalene
Naphthalene
Phenanthrene
Pyrene
Pyridine
Quinoline

Semivolatile Acid-Extractable Compounds:

Benzenethiol
Cresols
2,4-Dimethylphenol
2,4-Dinitrophenol
4-Nitrophenol
Phenol

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[1] Skinner List based on EPA/530-SW-85-003, April 1985 Report; Petitions to Delist Hazardous Wastes A Guidance Manual, page 19.

APPENDIX NO. 4

FIELD SAMPLING LOG FORMS

WELL OR DATE ____________

WATER LEVEL DATA

WELL LOCATION ____________ MEASURING POINT ____________

ELEVATION: MEASURING POINT ____________ GROUND LEVEL ____________

LOCATION ____________

PROJECT ____________

WELL or DATE	TIME	MEASURING DEVICE	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL		BY	COMMENTS
					DEPTH	ELEVATION		

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Figure 87-7, Water level data form

FIELD WATER QUALITY SAMPLING AND ANALYSES

INSTRUMENTS: OTHER:

TEMPERATURE _____ _____

CONDUCTIVITY _____ _____

pH _____ _____

LOCATION _____

PROJECT _____

GENERAL	LOCATION					
	WATER SOURCE					
	DATE					
	CLOCK TIME or PUMPING TIME					
SAMPLING CONDITIONS	SAMPLING METHOD					
	DEPTH SAMPLE TAKEN					
	WELL DEPTH					
	WATER HEIGHT ON GAUGE or STAFF					
	DISCHARGE (cfs or gpm)					
FIELD MEASUREMENTS AND ANALYSES	TEMPERATURE (°C or °F)					
	ELEC. COND. (μmhos/cm) MEASURED					
	ELEC. COND. (μmhos/cm) AT 25°C					
	pH					
	Eh					
SAMPLES COLLECTED and TREATMENT	GROSS unfiltered unpreserved					
	TRACE METALS filtered HNO_3					
	RADIOLOGICS unfiltered HCl					
	NUTRIENTS filtered HgCl					
	LABORATORY SENT TO / DATE					
SAMPLED/ANALYZED BY						

BROWN AND CALDWELL

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Figure 73-7, Sampling form

LEVELING FIELD FORM FOR GROUNDWATER ELEVATION CONTROL

LOCATION: _____ PROJECT NUMBER: _____

DATE: _____ INSTRUMENT: _____ INSTRUMENT NUMBER: _____

PARTY: _____ (instrument) _____ (rod)

PURPOSE: _____

REFERENCE POINT DESCRIPTION: _____

REFERENCE POINT ASSSUMED ELEVATION: _____ SOURCE: _____

STA.	BS(+)	HI	FS(-)	ELEV.	REMARKS
REF.					Reference Point for Establishing Datua

CHECK: _____ _____ REVIEWER: _____

DEFINITIONS:
STA. - Rod Station. Point of established elevation or point being established. Typically designated by a number (ie. 1, 2, 3, etc.)
BS - Backshot. A level shot to a point of known or just established elevation for the purpose of establishing a new instrument HI. (ELEV. + BS = HI)
HI - Height of Instrument. The elevation of the instrument crosshair, as established by a backshot to a point of known elevation.
FS - Foreshot. A level shot to a point of unknown elevation, made to establish the elevation of that point. (HI - FS = ELEV.)
ELEV. - Elevation. The elevation of a station. May be tied to mean sea level datum or can be an arbitrary elevation datum established to determine the relative elevation difference between various stations.
(TP) - Turning Point. Rod station about which the instrument is turned or moved. A level station for which an elevation is established by a FS. Then the instrument is moved to a new location and a BS is made to the TP to establish a new HI. The '(TP)' notation goes in the STA. column next to the number of the station about which the instrument is moved (ie. (TP)2, (TP)5, etc.)

COMMENTS: _____

_____

_____

Figure 35-1, Level circuit form

RECEIPT FOR SAMPLES

PROJECT NO.	PROJECT NAME	Name of Facility
SAMPLER(S): *(Signature)*		Facility Location
Split Samples Offered ( ) Accepted ( ) Declined		

Station Number	Date	Time	Comp.	Grab	Split Samples	Tag Numbers	Station Description	No. of Containers	Remarks

Transferred by: *(Signature)*	Received by: *(Signature)* Telephone Number
Date Time	Title Date Time

Distribution: Original to Coordinator Field Files; Copy to Facility

Figure 90-7, Receipt-for Samples form

CHAIN OF CUSTODY RECORD

BC Log Number _____

Client name	Project or PO#
Address	Phone #
City, State, Zip	Report attention

Lab Sample number	Date sampled	Time sampled	Type* See key below	Sampled by / Sample description	Number of containers	Analyses required	Hazardous sample Special handling required	Remarks

	Signature	Print Name	Company	Date	Time
Relinquished by					
Received by					
Relinquished by					
Received by					
Relinquished by					
Received by Laboratory					

BROWN AND CALDWELL LABORATORIES

☐ 1255 Powell Street, Emeryville, CA 94608 (415) 428-2300
☐ 373 South Fair Oaks Avenue, Pasadena, CA 91105 (818) 795-7553
☐ 1200 Pacifico Avenue, Anaheim, CA 92805

Note:
Samples are discarded 30 days after results are reported unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client expense.

*KEY: AQ—Aqueous NA—Nonaqueous SL—Sludge GW—Groundwater SO—Soil OT—Other PE—Petroleum

Figure 90-6, Chain-of-Custody form

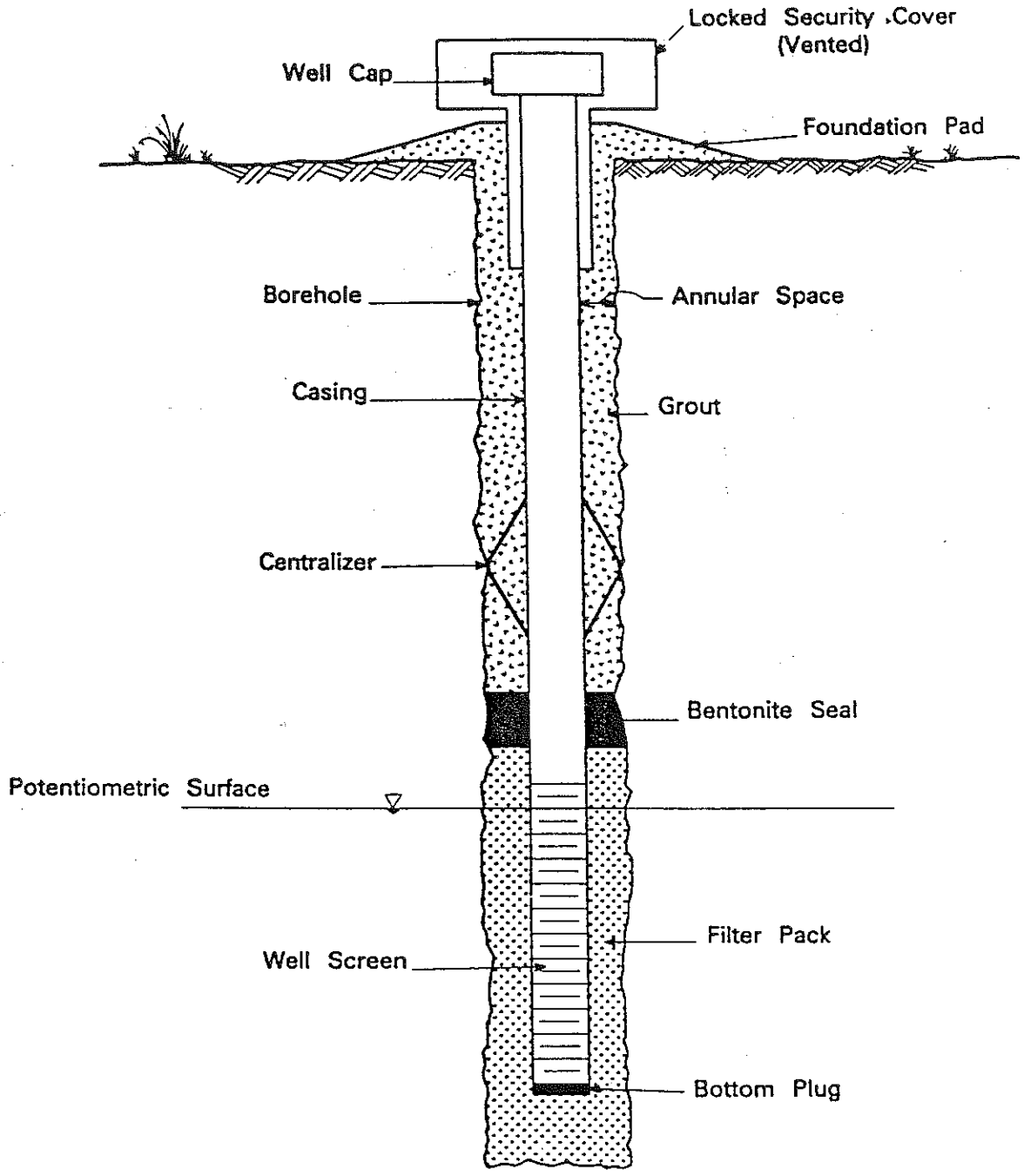

Figure 61-1, Generic type monitoring well

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

CLARK OIL & REFINING
PO BOX 7, HAWTHORNE STREET
HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 32262
PO # ---

ANALYSIS RESULTS

SAMPLE ID: OIL FROM DITCH
LAB ID: 9505/478-001
DATE COLLECTED: 05/26/95
DATE RECEIVED: 05/30/95 1:00

TEST PERFORMED	METHOD OF ANALYSIS	REGULATORY LEVEL	RESULTS		ANALYST
TCLP EXTRACTION	SW-846 1311				
METALS ANALYSIS	SW-846 6010		EXTRACTION		
ARSENIC		5.0	<0.200	mg/l	06/02/95 R.D.
BARIUM		100.0	0.599		
CADMIUM		1.0	<0.005		
CHROMIUM		5.0	0.011		
LEAD		5.0	<0.100		
SELENIUM		1.0	<0.200		
SILVER		5.0	<0.040		
MERCURY	SW-846 7470	0.2	<0.0002		06/02/95 D.S.

ELEMENT	SAMPLE RESULT MG/L	SPIKE LEVEL MG/L	SPIKE RESULT MG/L	PERCENT RECOVERY
ARSENIC	<0.200	5.0	4.62	92
BARIUM	0.599	5.0	5.05	89
CADMIUM	<0.005	1.0	0.922	92
CHROMIUM	0.011	5.0	4.61	92
LEAD	<0.100	5.0	4.50	90
MERCURY	<0.0002	0.002	0.0021	105
SELENIUM	<0.200	1.0	0.911	91
SILVER	<0.040	1.0	0.924	92

$$\text{PERCENT RECOVERY} = \frac{(\text{SPIKE RESULT} - \text{SAMPLE RESULT})}{\text{SPIKE LEVEL}} \times 100$$

JUNE 9, 1995

01031

Wayne L. Cooper MEC

WAYNE L. COOPER
LABORATORY DIRECTOR

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CLARK OIL & REFINING
PO BOX 7, HAWTHORNE STREET
HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 32262
PO # ---

01032

ANALYSIS RESULTS

SAMPLE ID: SOIL FROM POND
LAB ID: 9505/478-002
DATE COLLECTED: 05/26/95
DATE RECEIVED: 05/30/95 1:00

TEST PERFORMED	METHOD OF ANALYSIS	REGULATORY LEVEL	RESULTS		ANALYST
TCLP EXTRACTION	SW-846 1311				
METALS ANALYSIS	SW-846 6010		EXTRACTION		
ARSENIC		5.0	<0.200	mg/l	06/02/95 R.D.
BARIUM		100.0	1.62		
CADMIUM		1.0	<0.005		
CHROMIUM		5.0	0.192		
LEAD		5.0	<0.100		
SELENIUM		1.0	<0.200		
SILVER		5.0	<0.040		
MERCURY	SW-846 7470	0.2	<0.0002		06/02/95 D.S.

ELEMENT	SAMPLE RESULT MG/L	SPIKE LEVEL MG/L	SPIKE RESULT MG/L	PERCENT RECOVERY
ARSENIC	<0.200	5.0	4.85	97
BARIUM	1.62	5.0	6.59	99
CADMIUM	<0.005	1.0	0.902	90
CHROMIUM	0.192	5.0	4.73	91
LEAD	<0.100	5.0	4.40	88
MERCURY	<0.0002	0.002	0.0021	105
SELENIUM	<0.200	1.0	1.05	105
SILVER	<0.040	1.0	0.988	99

$$\text{PERCENT RECOVERY} = \frac{(\text{SPIKE RESULT} - \text{SAMPLE RESULT})}{\text{SPIKE LEVEL}} \times 100$$

JUNE 9, 1995

WL Cooper MEC

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PO BOX 7, HAWTHORNE STREET
HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 32262
PO # ---

ANALYSIS RESULTS

SAMPLE ID: SOIL FROM POND
LAB ID: 9505/478-003
DATE COLLECTED: 05/26/95
DATE RECEIVED: 05/30/95 1:00

01033

TEST PERFORMED	METHOD OF ANALYSIS	REGULATORY LEVEL	RESULTS		ANALYST
TCLP EXTRACTION	SW-846 1311				
METALS ANALYSIS	SW-846 6010		EXTRACTION		
ARSENIC		5.0	<0.200	mg/l	06/02/95 R.D.
BARIUM		100.0	1.98		
CADMIUM		1.0	<0.005		
CHROMIUM		5.0	0.423		
LEAD		5.0	<0.100		
SELENIUM		1.0	<0.200		
SILVER		5.0	<0.040		
MERCURY	SW-846 7470	0.2	<0.0002		06/02/95 D.S.

ELEMENT	SAMPLE RESULT MG/L	SPIKE LEVEL MG/L	SPIKE RESULT MG/L	PERCENT RECOVERY
ARSENIC	<0.200	5.0	4.75	95
BARIUM	1.98	5.0	6.73	95
CADMIUM	<0.005	1.0	0.890	89
CHROMIUM	0.423	5.0	4.89	89
LEAD	<0.100	5.0	4.28	86
MERCURY	<0.0002	0.002	0.0020	100
SELENIUM	<0.200	1.0	1.08	108
SILVER	<0.040	1.0	0.965	96

$$\text{PERCENT RECOVERY} = \frac{(\text{SPIKE RESULT} - \text{SAMPLE RESULT})}{\text{SPIKE LEVEL}} \times 100$$

JUNE 9, 1995

WAYNE L. COOPER
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HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 32262
PO # ---

01034

TCLP VOLATILE ORGANIC ANALYSIS
METHOD SW-846 8240

SAMPLE ID: TCLP BLANK
LAB ID: TCBLK1471A

CAS NUMBER		REGULATORY LEVEL µg/L	PRACTICAL QUANTITATION LIMIT	RESULTS
75-01-4	Vinyl Chloride	200	100 µg/l	U µg/l
75-35-4	1,1-Dichloroethene	700	50	U
67-66-3	Chloroform	6,000	200	U
107-06-2	1,2-Dichloroethane	500	50	U
78-93-3	2-Butanone	200,000	150	U
56-23-5	Carbon Tetrachloride	500	50	U
79-01-6	Trichloroethene	500	50	U
71-43-2	Benzene	500	50	U
127-18-4	Tetrachloroethene	700	50	U
108-90-7	Chlorobenzene	100,000	50	U
106-46-7	1,4-Dichlorobenzene	7,500	100	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : ---
DATE RECEIVED : ---
DATE ANALYZED : 06/01/95 J.M.

JUNE 9, 1995

Wayne Cooper MEC

WAYNE L. COOPER
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HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 32262
PO # ---

01035

TCLP VOLATILE ORGANIC ANALYSIS
METHOD SW-846 8240

SAMPLE ID: OIL FROM DITCH
LAB ID: 9505/478-001

CAS NUMBER		REGULATORY LEVEL µg/L	PRACTICAL QUANTITATION LIMIT	RESULTS
75-01-4	Vinyl Chloride	200	100 µg/l	U µg/l
75-35-4	1,1-Dichloroethene	700	50	U
67-66-3	Chloroform	6,000	200	U
107-06-2	1,2-Dichloroethane	500	50	U
78-93-3	2-Butanone	200,000	150	U
56-23-5	Carbon Tetrachloride	500	50	U
79-01-6	Trichloroethene	500	50	U
71-43-2	Benzene	500	50	U
127-18-4	Tetrachloroethene	700	50	U
108-90-7	Chlorobenzene	100,000	50	U
106-46-7	1,4-Dichlorobenzene	7,500	100	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : 05/26/95
DATE RECEIVED : 05/30/95 1:00
DATE ANALYZED : 06/01/95 J.M.

JUNE 9, 1995

WAYNE L. COOPER
LABORATORY DIRECTOR

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CLARK OIL & REFINING
PO BOX 7, HAWTHORNE STREET
HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 32262
PO # ---

01036

VOLATILE TCLP SPIKE RECOVERY FORM

SAMPLE ID: OIL FROM DITCH
LAB ID: 9505/478-001

COMPOUND	SAMPLE RESULT (µg/l)	SPIKE LEVEL (µg/l)	SPIKE RESULT (µg/l)	PERCENT RECOVERY
Vinyl Chloride	U	500	500	100
1,1-Dichloroethene	U	500	480	96
Chloroform	U	500	500	100
1,2-Dichloroethane	U	500	480	96
2-Butanone	U	500	660	132
Carbon Tetrachloride	U	500	550	110
Trichloroethene	U	500	520	104
Benzene	U	500	530	106
Tetrachloroethene	U	1,000	970	97
Chlorobenzene	U	500	510	102
1,4-Dichlorobenzene	U	500	520	104

CALCULATIONS:

$$\text{PERCENT RECOVERY} = \frac{(\text{SPIKE RESULT} - \text{SAMPLE RESULT})}{\text{SPIKE LEVEL}} \times 100$$

U = UNDETECTED

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

CLARK OIL & REFINING
PO BOX 7, HAWTHORNE STREET
HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 32262
PO # ---

01037

TCLP VOLATILE ORGANIC ANALYSIS
METHOD SW-846 8240

SAMPLE ID: SOIL FROM POND
LAB ID: 9505/478-002

CAS NUMBER		REGULATORY LEVEL µg/L	PRACTICAL QUANTITATION LIMIT	RESULTS
75-01-4	Vinyl Chloride	200	100 µg/l	U µg/l
75-35-4	1,1-Dichloroethene	700	50	U
67-66-3	Chloroform	6,000	200	U
107-06-2	1,2-Dichloroethane	500	50	U
78-93-3	2-Butanone	200,000	150	U
56-23-5	Carbon Tetrachloride	500	50	U
79-01-6	Trichloroethene	500	50	U
71-43-2	Benzene	500	50	U
127-18-4	Tetrachloroethene	700	50	U
108-90-7	Chlorobenzene	100,000	50	U
106-46-7	1,4-Dichlorobenzene	7,500	100	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : 05/26/95
DATE RECEIVED : 05/30/95 1:00
DATE ANALYZED : 06/01/95 J.M.

JUNE 9, 1995

WLC Cooper, Inc

WAYNE L. COOPER
LABORATORY DIRECTOR

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HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 32262
PO # ---

01038

VOLATILE TCLP SPIKE RECOVERY FORM

SAMPLE ID: SOIL FROM POND
LAB ID: 9505/478-002

COMPOUND	SAMPLE RESULT (µg/l)	SPIKE LEVEL (µg/l)	SPIKE RESULT (µg/l)	PERCENT RECOVERY
Vinyl Chloride	U	500	490	98
1,1-Dichloroethene	U	500	480	96
Chloroform	U	500	500	100
1,2-Dichloroethane	U	500	450	90
2-Butanone	U	500	510	102
Carbon Tetrachloride	U	500	510	102
Trichloroethene	U	500	470	94
Benzene	U	500	480	96
Tetrachloroethene	U	1,000	980	98
Chlorobenzene	U	500	480	96
1,4-Dichlorobenzene	U	500	490	98

CALCULATIONS:

$$\text{PERCENT RECOVERY} = \frac{(\text{SPIKE RESULT} - \text{SAMPLE RESULT})}{\text{SPIKE LEVEL}} \times 100$$

U = UNDETECTED

ENVIRONMETRICS
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HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 32262
PO # ---

01059

TCLP VOLATILE ORGANIC ANALYSIS
METHOD SW-846 8240

SAMPLE ID: SOIL FROM POND
LAB ID: 9505/478-003

CAS NUMBER		REGULATORY LEVEL µg/L	PRACTICAL QUANTITATION LIMIT	RESULTS
75-01-4	Vinyl Chloride	200	100 µg/l	U µg/l
75-35-4	1,1-Dichloroethene	700	50	U
67-66-3	Chloroform	6,000	200	U
107-06-2	1,2-Dichloroethane	500	50	U
78-93-3	2-Butanone	200,000	150	150
56-23-5	Carbon Tetrachloride	500	50	U
79-01-6	Trichloroethene	500	50	U
71-43-2	Benzene	500	50	U
127-18-4	Tetrachloroethene	700	50	U
108-90-7	Chlorobenzene	100,000	50	U
106-46-7	1,4-Dichlorobenzene	7,500	100	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : 05/26/95
DATE RECEIVED : 05/30/95 1:00
DATE ANALYZED : 06/01/95 J.M.

JUNE 9, 1995

WL Cooper mgr

WAYNE L. COOPER
LABORATORY DIRECTOR

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

CLARK OIL & REFINING
PO BOX 7, HAWTHORNE STREET
HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 32262
PO # ---

VOLATILE TCLP SPIKE RECOVERY FORM 01040

SAMPLE ID: SOIL FROM POND
LAB ID: 9505/478-003

COMPOUND	SAMPLE RESULT (µg/l)	SPIKE LEVEL (µg/l)	SPIKE RESULT (µg/l)	PERCENT RECOVERY
Vinyl Chloride	U	500	490	98
1,1-Dichloroethene	U	500	510	102
Chloroform	U	500	510	102
1,2-Dichloroethane	U	500	480	96
2-Butanone	150	500	740	118
Carbon Tetrachloride	U	500	520	104
Trichloroethene	U	500	490	98
Benzene	U	500	480	96
Tetrachloroethene	U	1,000	1,000	100
Chlorobenzene	U	500	570	102
1,4-Dichlorobenzene	U	500	520	104

CALCULATIONS:

$$\text{PERCENT RECOVERY} = \frac{(\text{SPIKE RESULT} - \text{SAMPLE RESULT})}{\text{SPIKE LEVEL}} \times 100$$

U = UNDETECTED

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CLARK OIL & REFINING
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HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 29004
PO # ---

FAXED TO GREG

ANALYSIS RESULTS

SAMPLE ID: 94-0014 COKE CONTAMINATED WITH DEBRIS
LAB ID: 9410967
DATE COLLECTED: 10/14/94
DATE RECEIVED: 10/17/94

TEST PERFORMED	METHOD OF ANALYSIS	REGULATORY LEVEL	RESULTS	ANALYST
TCLP EXTRACTION	SW-846 1311			
METALS ANALYSIS	SW-846 6010		EXTRACTION	
ARSENIC		5.0	<0.200 mg/l	10/19/94 R.D.
BARIUM		100.0	0.503	
CADMIUM		1.0	<0.005	
CHROMIUM		5.0	0.030	
COPPER		---	0.065	
LEAD		5.0	<0.100	
NICKEL		---	<0.040	
SELENIUM		1.0	<0.200	
SILVER		5.0	<0.040	
ZINC		---	0.684	
MERCURY	SW-846 7470	0.2	0.0003	

OCTOBER 27, 1994

WAYNE E. COOPER
LABORATORY DIRECTOR

00896

ENVIRONMETRICS
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INVOICE # 29004
PO # ---

TCLP SPIKE RECOVERY FORM

METALS

SAMPLE ID: 94-0014 COKE CONTAMINATED WITH DEBRIS
LAB ID: 9410967
DATE COLLECTED: 10/14/94
DATE RECEIVED: 10/17/94

ELEMENT	SAMPLE RESULT MG/L	SPIKE LEVEL MG/L	SPIKE RESULT MG/L	PERCENT RECOVERY
ARSENIC	<0.200	5.0	4.71	94
BARIUM	0.503	5.0	5.31	96
CADMIUM	<0.005	1.0	0.873	87
CHROMIUM	0.030	5.0	4.48	89
LEAD	<0.100	5.0	4.61	92
MERCURY	0.0003	0.002	0.0024	105
SELENIUM	<0.200	1.0	0.986	99
SILVER	<0.040	1.0	0.938	94

$$\text{PERCENT RECOVERY} = \frac{(\text{SPIKE RESULT} - \text{SAMPLE RESULT}) \times 100}{\text{SPIKE LEVEL}}$$

00897

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HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 29004
PO # ---

ANALYSIS RESULTS

SAMPLE ID: 94-0014 COKE CONTAMINATED WITH DEBRIS
LAB ID: 9410967
DATE COLLECTED: 10/14/94
DATE RECEIVED: 10/17/94

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS		ANALYST
METALS ANALYSIS	SW-846 6010	TOTAL		
ARSENIC		<10.3	mg/kg	10/18/94 R.D.
BARIUM		20.7		
CADMIUM		1.44		
CHROMIUM		9.49		
COPPER		6.03		
LEAD		8.82		
NICKEL		18.8		
SELENIUM		<10.3		
SILVER		<0.516		
ZINC		19.9		
MERCURY	SW-846 7471	<0.10		10/19//94 D.S.

OCTOBER 27, 1994

WAYNE L. COOPER
LABORATORY DIRECTOR

00898

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HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 29004
PO # ---

ANALYSIS RESULTS

SAMPLE ID: 94-0014 COKE CONTAMINATED WITH DEBRIS
LAB ID: 9410967
DATE COLLECTED: 10/14/94
DATE RECEIVED: 10/17/94

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS	ANALYST
PHYSICAL APPEARANCE	ASTM D4979	*	10/27/94 C.F.
APPARENT ODOR	ASTM D4979	NO APPARENT ODOR	10/27/94 C.F.
ASH	ASTM D2974	30.04 %	10/27/94 C.F.
TOTAL CYANIDE	SW-846 9010	0.21 mg/kg	10/19/94 S.H.
FLASH POINT	ASTM D92	>200 (°F)	10/27/94 C.F.
pH	ASTM D4980-B	8.51	10/19/94 K.L.
TOTAL SOLIDS	EPA 160.3	94.19 %	10/26/94 S.H.
REACTIVE SULFIDE	SW-846 9030	<0.1 mg/kg	10/20/94 K.L.
WATER REACTIVITY	ASTM D5058	NEGATIVE	10/27/94 C.F.
TOTAL PCBs IN SOIL	SW-846 8080	<2 mg/kg	10/18/94 S.O.

* = BLACK GRANULAR & POWDER MIX 1/4" TO 60 MESH WITH A FEW 1/2" ROCKS HEAVIER THAN H2O-NOT MISCIBLE.

00899

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ATTN: MO MODARRES

INVOICE # 29004
PO # ---

TCLP VOLATILE ORGANIC ANALYSIS
METHOD SW-846 8240

SAMPLE ID: TCLP BLANK
LAB ID: TBBLK1236A

CAS NUMBER		REGULATORY LEVEL µg/L	PRACTICAL QUANTITATION LIMIT	RESULTS
75-01-4	Vinyl Chloride	200	100 µg/l	U µg/l
75-35-4	1,1-Dichloroethene	700	50	U
67-66-3	Chloroform	6,000	200	U
107-06-2	1,2-Dichloroethane	500	50	U
78-93-3	2-Butanone	200,000	150	U
56-23-5	Carbon Tetrachloride	500	50	U
79-01-6	Trichloroethene	500	50	U
71-43-2	Benzene	500	50	U
127-18-4	Tetrachloroethene	700	50	U
108-90-7	Chlorobenzene	100,000	50	U
106-46-7	1,4-Dichlorobenzene	7,500	100	U

TCLP SEMIVOLATILE ORGANIC COMPOUNDS
METHOD SW-846 8270

SAMPLE ID: TCLP BLANK
LAB ID: TASBLK5503

CAS NUMBER		REGULATORY LEVEL µg/L	PRACTICAL QUANTITATION LIMIT	RESULTS
110-86-1	Pyridine	5,000	500 µg/l	U µg/l
95-48-7	o-Cresol	200,000	100	U
106-44-5	m & p-Cresol	200,000	100	U
67-72-1	Hexachloroethane	3,000	100	U
98-95-3	Nitrobenzene	2,000	100	U
87-68-3	Hexachlorobutadiene	500	100	U
88-06-2	2,4,6-Trichlorophenol	2,000	100	U
95-95-4	2,4,5-Trichlorophenol	400,000	100	U
121-14-2	2,4-Dinitrotoluene	130	100	U
118-74-1	Hexachlorobenzene	130	100	U
87-86-5	Pentachlorophenol	100,000	100	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : ---
DATE RECEIVED : ---
DATE ANALYZED : 10/18/94 L.C.
10/18/94 J.W.

00900

OCTOBER 27, 1994

WAYNE L. COOPER
LABORATORY DIRECTOR

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

CLARK OIL & REFINING
PO BOX 7, HAWTHORNE STREET
HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 29004
PO # ---

TCLP VOLATILE ORGANIC ANALYSIS
METHOD SW-846 8240

SAMPLE ID: 94-0014 COKE CONTAMINATED WITH DEBRIS
LAB ID: 9410967

CAS NUMBER		REGULATORY LEVEL µg/L	PRACTICAL QUANTITATION LIMIT	RESULTS
75-01-4	Vinyl Chloride	200	100 µg/l	U µg/l
75-35-4	1,1-Dichloroethene	700	50	U
67-66-3	Chloroform	6,000	200	U
107-06-2	1,2-Dichloroethane	500	50	U
78-93-3	2-Butanone	200,000	150	U
56-23-5	Carbon Tetrachloride	500	50	U
79-01-6	Trichloroethene	500	50	U
71-43-2	Benzene	500	50	U
127-18-4	Tetrachloroethene	700	50	U
108-90-7	Chlorobenzene	100,000	50	U
106-46-7	1,4-Dichlorobenzene	7,500	100	U

TCLP SEMIVOLATILE ORGANIC COMPOUNDS
METHOD SW-846 8270

SAMPLE ID: 94-0014 COKE CONTAMINATED WITH DEBRIS
LAB ID: 9410967

CAS NUMBER		REGULATORY LEVEL µg/L	PRACTICAL QUANTITATION LIMIT	RESULTS
110-86-1	Pyridine	5,000	500 µg/l	U µg/l
95-48-7	o-Cresol	200,000	100	U
106-44-5	m & p-Cresol	200,000	100	U
67-72-1	Hexachloroethane	3,000	100	U
98-95-3	Nitrobenzene	2,000	100	U
87-68-3	Hexachlorobutadiene	500	100	U
88-06-2	2,4,6-Trichlorophenol	2,000	100	U
95-95-4	2,4,5-Trichlorophenol	400,000	100	U
121-14-2	2,4-Dinitrotoluene	130	100	U
118-74-1	Hexachlorobenzene	130	100	U
87-86-5	Pentachlorophenol	100,000	100	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

00901

OCTOBER 27, 1994

DATE COLLECTED : 10/14/94
DATE RECEIVED : 10/17/94
DATE ANALYZED : 10/18/94 L.C.
10/18/94 J.W.

WAYNE L. COOPER
LABORATORY DIRECTOR

ENVIRONMETRICS
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Maryland Heights, MO 63043-3529
(314) 427-0550

CLARK OIL & REFINING
PO BOX 7, HAWTHORNE STREET
HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 29004
PO # ---

VOLATILE TCLP SPIKE RECOVERY FORM

SAMPLE ID: 94-0014 COKE CONTAMINATED WITH DEBRIS
LAB ID: 9410967

COMPOUND	SAMPLE RESULT (µg/l)	SPIKE LEVEL (µg/l)	SPIKE RESULT (µg/l)	PERCENT RECOVERY
Vinyl Chloride	U	500	430	86
1,1-Dichloroethene	U	500	450	90
Chloroform	U	500	500	100
1,2-Dichloroethane	U	500	520	104
2-Butanone	U	500	600	120
Carbon Tetrachloride	U	500	480	96
Trichloroethene	U	500	470	94
Benzene	U	500	500	100
Tetrachloroethene	U	1,000	880	88
Chlorobenzene	U	500	480	96
1,4-Dichlorobenzene	U	500	540	108

CALCULATIONS:

$$\text{PERCENT RECOVERY} = \frac{(\text{SPIKE RESULT} - \text{SAMPLE RESULT})}{\text{SPIKE LEVEL}} \times 100$$

U = UNDETECTED

00902

ENVIRONMETRICS
2345 Millpark Drive
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HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 29004
PO # ---

SEMIVOLATILE TCLP SPIKE RECOVERY FORM

SAMPLE ID: 94-0014 COKE CONTAMINATED WITH DEBRIS
LAB ID: 9410967

COMPOUND	SAMPLE RESULT (µg/l)	SPIKE LEVEL (µg/l)	SPIKE RESULT (µg/l)	PERCENT RECOVERY
Pyridine	U	1,000	460	46
o-Cresol	U	2,000	1,400	70
m & p-Cresol	U	2,000	1,500	75
Hexachloroethane	U	1,000	670	67
Nitrobenzene	U	1,000	870	87
Hexachlorobutadiene	U	500	420	84
2,4,6-Trichlorophenol	U	2,000	1,500	75
2,4,5-Trichlorophenol	U	2,000	1,400	70
2,4-Dinitrotoluene	U	500	500	100
Hexachlorobenzene	U	500	590	118
Pentachlorophenol	U	2,000	2,100	105

CALCULATIONS:

$$\text{PERCENT RECOVERY} = \frac{(\text{SPIKE RESULT} - \text{SAMPLE RESULT})}{\text{SPIKE LEVEL}} \times 100$$

U = UNDETECTED

00083

ENVIRONMETRICS
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ATTN: MO MODARRES

INVOICE # 29004
PO # ---

F-LISTED SOLVENTS
F001 - F005

SAMPLE ID: METHOD BLANK

COMPOUND	PRACTICAL QUANTITATION LIMIT	RESULTS
Acetone	20 µg/kg	U µg/kg
Benzene	5.0	U
n-Butyl alcohol	330	U
Carbon disulfide	5.0	U
Carbon tetrachloride	5.0	U
Chlorobenzene	5.0	U
o-Cresol	330	U
m & p-Cresol	330	U
Cyclohexanone	270	U
1,2-Dichlorobenzene	10	U
2-Ethoxyethanol	500	U
Ethyl acetate	3,300	U
Ethyl ether	3,400	U
Ethylbenzene	5.0	U
Isobutanol	250	U
Methanol	250	U
Methyl ethyl ketone	15	U
Methyl isobutyl ketone	10	U
Methylene Chloride	5.0	U
Nitrobenzene	330	U
2-Nitropropane	25	U
Pyridine	1,700	U
Tetrachloroethylene	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
1,1,2-Trichloro-1,2,2-trifluoroethane	40	U
Trichloroethylene	5.0	U
Trichlorofluoromethane	10	U
Total Xylene	5.0	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : ---
DATE RECEIVED : ---
DATE ANALYZED : 10/21/94 L.C.
10/18/94 J.W.
10/20/94 S.L.

OCTOBER 27, 1994

WAYNE L. COOPER
LABORATORY DIRECTOR

C0064

ENVIRONMETRICS
2345 Millpark Drive
Maryland Heights, MO 63043-3529
(314) 427-0550

CLARK OIL & REFINING
PO BOX 7, HAWTHORNE STREET
HARTFORD, IL 62048

ATTN: MO MODARRES

INVOICE # 29004
PO # ---

F-LISTED SOLVENTS
F001 - F005

SAMPLE ID: 94-0014 COKE CONTAMINATED WITH DEBRIS
LAB ID: 9410967

COMPOUND	PRACTICAL QUANTITATION LIMIT	RESULTS
Acetone	40 µg/kg	170 µg/kg
Benzene	10	U
n-Butyl alcohol	330	U
Carbon disulfide	10	17
Carbon tetrachloride	10	U
Chlorobenzene	10	U
o-Cresol	1,800	2,200
m & p-Cresol	1,800	4,300
Cyclohexanone	270	U
1,2-Dichlorobenzene	20	U
2-Ethoxyethanol	500	U
Ethyl acetate	3,300	U
Ethyl ether	3,400	U
Ethylbenzene	10	U
Isobutanol	250	U
Methanol	250	U
Methyl ethyl ketone	30	14J
Methyl isobutyl ketone	20	U
Methylene Chloride	10	170
Nitrobenzene	1,800	U
2-Nitropropane	50	U
Pyridine	8,800	U
Tetrachloroethylene	10	U
Toluene	10	U
1,1,1-Trichloroethane	10	U
1,1,2-Trichloroethane	10	U
1,1,2-Trichloro-1,2,2-trifluoroethane	80	U
Trichloroethylene	10	U
Trichlorofluoromethane	20	5.0J
Total Xylene	10	U

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED : 10/14/94
DATE RECEIVED : 10/17/94
DATE ANALYZED : 10/21/94 L.C.
10/18/94 J.W.
10/20/94 S.L.

OCTOBER 27, 1994

WAYNE L. COOPER
LABORATORY DIRECTOR

00005

COOK COUNTY DEPARTMENT OF ENVIRONMENTAL CONTROL

MAYBROOK CIVIC CENTER

1500 MAYBROOK DRIVE • ROOM 202 • MAYWOOD, ILLINOIS 60153 • PHONE: 708/865-6165 • FAX NO.: 708/865-6361

RICHARD J. PHELAN, PRESIDENT
BOARD OF COUNTY COMMISSIONERS

Charles F. Lagges
Director

January 5, 1994

Mr. Cliff Gould
Illinois Environmental Protection Agency
1701 South First Avenue
Maywood, IL 60153

Dear Mr. Gould,

Our Department has received two separate complaints which would appear to fall under the Illinois Environmental Protection Agency(IEPA) Land Pollution Division authority.

The first compliant which I have alredy discussed with you on the telephone involves two workers who while digging a trench at Clark Oil refinery alleged to have been exposed to benzene vapors. The workers subsequently sought treatment at a medical facility and called the Occupational Safety and Health Administration(OSHA) who in turn informed the workers to call our Department. After receiving their compliant I telephoned Clark Oil and had my call returned by Ron Snook. Ron determined the workers were employed by Van Dyke Construction, an outside contracting firm. I informed Ron that I had also contacted Mr. Gould at the IEPA Land Division since this would appear to be a land pollution problem. Ron stated he would also contact Mr. Gould.

At this point there did not appear to be any continual release of benzene or additional exposures and Clark Oil knew of the incident, therefore the original exposure compliant was a safety issue and could best be handled by OSHA. I then called OSHA and was informed a compliant was filed with their office in Calumet City, but they could not release any other information due to worker confidentially rights.

However, it would appear that there may be soil contamination on Clark Oil's site which could require land remediation. Our Department could then be involved at this time since our Ordinance requires a permit application for land remediation processes to be obtained, where air pollutants would be emitted to the atmosphere.

The second compliant is from Susan Gallo from the Groebe Management Services who manages property next to a vacant farm site where chemicals appear, according to the complainant, to be leaking into the ground form multiple drums and canisters. I have attached copies of two letters we have received concerning this matter. One letter is from Groebe Management and the other is from the Cook County Department of Public Health.

AT

DLPC COMPLAINT INVESTIGATION FORM

031024 0005 - Cook Co
IEPA ID # County

010

Clark Oil & Refining
Site Name

ILD005109822 Complaint #: C94 - 206 N
USEPA ID #
FOS

Date Recvd: 3/30/94 By: CH By Phone: X In Person: ___ By Mail: ___

Complainant: Bob Kittl
Address: 14637 S. Kildare
Midlothian, IL 60445
Telephone: 708/385-7135

Respondent: Clark Oil & Refining
Address: 13100 S Kedzie Ave
Blue Island 60406
Telephone: 708/385-5000

Directions to Source: Need to contact complainent to act as guide to location

Complaint Details: Complainent saw a red "tank truck" dumping in a field on or near the Clark Oil refinery in Blue Island. Material was "steaming" on ground. Truck had HazMat placards on it. This happened about 10 days ago (3/20?).

INVESTIGATION FINDINGS

Date Invest: 4/13/94 Time From: 10:30 Am To: 11:15 Am Aaron Taylor Inspector 4 Photos

Interviewed: Bob Kittl, Ron Snook Weather: Sl Cldy approx 45°=

Remarks:
See Open Dump report dated 4/13/94

Complainent Notified of Findings? Yes: ___ No: ___ Findings Entered into Computer: ___

CC: Northern Region
DIVISION FILE

CONFIDENTIAL

D.L.P.C. COMPLAINT INVESTIGATION FORM

C of C - (-) 41 49 N - 87 [illegible] -
[illegible] / Mark Kennedy ( )

Date Received 8/18 By [illegible] By Phone In Person By Mail

Complainant Peter Werbicki Jr. Respondent

Address 3425 W. 123rd Place Alsip Address

Telephone 371-4922 Telephone

Directions To Source near 127th & Holman - go south on Holman and its on the west side of the street (long, open stretch between)

Complaint Details a creek runs to Holman and its about 100 ft from the creek. This creek leads into Stony Creek
[illegible] drums splitting open & contents spilling on ground
"5 ft deep in chemicals" bad odor.

****

INVESTIGATION FINDINGS

Date 8-21-80 Time [illegible] By [illegible]

Interviewed [illegible] Weather [illegible] Photos [illegible]

Violations Observed The area this complaint refers to is
[illegible] 127th [illegible] Blue Island. (see sketch).
[illegible] and all waste material
[illegible] by Sanco. Unable [illegible] to
Respondent's Remarks [illegible]. Many drums [illegible]
[illegible] and stored [illegible] have
removed. We observed that [illegible] now no [illegible]
[illegible] the area [illegible] and removed.

****

FOLLOW-UP ACTION

Refer To

File Opened Yes No

CC Northern Pe[illegible]
[illegible]

LPC-41 8/79

RECEIVED
SEP - 2 1980
E.P.A. — D.L.P.C.
STATE OF ILLINOIS

E.P.A. RECIP

RCRA 4636

CENTRAL REGIONAL LABORATORY SAMPLE DATA REPORT
ORGANICS/INORGANICS
THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

LOG IN DATE: 11/27
DUE DATE: 12/23/87

CASE NUMBER 8521, SAS# 3478-E SITE NAME Clark Oil Refinery LABORATORY Organics: S-Cubed Inorganics: Northern Testing EPTox: Region 5 CRL DATE SHIPPED 11-19-87 & 11-20-87

PAGE 1 OF 1

SUPERFUND CU NUMBER D307 ~~RCRA~~ 11/30/87 wk EPA RPM (S.M.S.)/(CES) Lily Hershkovitz

ACTIVITY NUMBER C27150

CRL LOG NUMBER	ORGANIC TRAFFIC REPORT NUMBER	INORGANIC TRAFFIC REPORT NUMBER	WATER OR LIQUIDS														SEDIMENTS												
			ACID BASE NEUTRAL CPDY ORGANIC SCAN UG/L TOX17574	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG/L TOX17564	WATER POLYCHLORINATED BIPHENYLS UG/L PES 17144	WATER CHLORINATED PESTICIDES UG/L PES17134	TOTAL METALS IN WATER UG/L MET111	WATER CYNANIDE UG/L MIN74919	NITRATE/NITRITE MG/L MIN7284	AMMONIA MG/L MIN7294	RESIDUE, FILTERABLE TDS MG/L MIN7362	RESIDUE, NON-FILT TSS MG/L MIN7372	Sulfides and Grease Oil & Grease 11/30/87 wk EP Toxicity		ACID-BASE NEUTRAL CPDS ORGANIC SCAN MG/KG TOX215722	VOLATILE ORGANIC ANALYSIS SCAN MG/KG TOX215622	SEDIMENTS POLYCHLORINATED BIPHENYLS MG/KG PES211422	SEDIMENT CHLORINATED PESTICIDES MG/KG 211322	TOTAL METALS MG/KG MET413	CYANIDE MG/KG MIN44930	NITRATE/NITRITE MG/KG	AMMONIA MG/KG MIN42925	11/30/87 wk EP Toxicity				
88J601543	EP725 ✓	MEP346 ✓													X	X			X	X								
88J601544	EP726 ✓	MEP347 ✓													X	X			X	X								
88J601545	EP727 ✓		X	X	X	X						X	X	X														
88J601546	EP731 ✓	3478E01	X	X	X	X						X	X	X														
88J601547	EP728 ✓	3478E02	X	X	X	X						X	X	X														
88J601548	EP729 ✓	3478E03	X	X	X	X						X	X	X														
88J601549		3478E04										X	X	X														
88J601550		3478E05										X	X	X														
88J601551	EP732 ✓		X	X	X	X						X	X	X														
88J601552	EP730 ✓	3478E06	X	X	X	X						X	X	X														
~~88J601553~~	11/30/87 wk																											
~~88J601554~~																												
~~88J601555~~																												
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~~88J601558~~	↓																											

COPY

S-CUBED
A Division of Maxwell Laboratories, Inc.

RCRA 4636

December 16, 1987

Volume 1 of 2

NARRATIVE CASE 8521
S-CUBED CONTRACT NO. 68-01-7261

This case consists of two soil samples for ABN and volatile analysis, five water for full analysis and one water sample for ABN and volatile analysis. The samples were all very complex with the exception of EP731. Most necessitated high dilution in all fractions. In fact, EP729 appeared to be pure oil (not a low level water as indicated) thus, was extracted with a 1-mL initial volume. The following dilutions were necessary

Sample	VOA	BNA	Pesticide
EP725*	1:1	1:3	NR
EP726*	1:0.4	1:3	NR
EP727	1:10	1:5	NR
EP728	1:500	1:40	1:10
EP729**	1:20	1:8,000	1:1,000+
EP730	1:50	1:20	1:1+
EP731	1:1	1:1	1:1
EP732	1:20	1:10	1:1+

*Medium level soil, all analysis.
**Initial volume 1 mL
+Numerous analytes calculated on a 1:10 dilution.

Due to these dilutions numerous ABN surrogates were diluted out. Matrix spike recoveries were also affected by the dilutions of these samples. Pesticide matrix analysis was essentially impossible due to both the dilution and the high level of native compound in sample EP730.

Pesticide analyses were negatively affected by the complexity of these samples. In numerous instances, analytes detected out side of retention time windows. Although these analytes may possibly be present, they were not reported on Form 1. All samples were subjected to both alumina and a mercury cleanup but this did not significantly improve the analyses.

JoAnn Wilkinson

JoAnn Wilkinson, Project Manager

P.O. Box 1620, La Jolla, California 92038-1620
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SOIL SURROGATE PERCENT RECOVERY SUMMARY

Case No. 8521 Contract Laboratory S-CUBED Contract No. 68-01-72

Low ____ Medium X

	SMO TRAFFIC NO.	TOLUENE-D8 (81-117)	BFB (74-121)	1,2 DICHLOROETHANE-D4 (70-121)	NITROBENZENE-D5 (23-120)	2-FLUOROBIPHENYL (30-115)	TERPHENYL-D14 (18-137)			PHENOL-D6 (24-113)	2-FLUOROPHENOL (25-121)	2,4,6 TRIBROMOPHENOL (19-122)	DIBUTYLCHLORENDATE (20-150)
		VOLATILE				SEMI-VOLATILE							PESTICIDE**
	EP725	102	106	97	73	87	77			77	76	75	
	EP725MS		NR		84	96	85			88	83	87	
	EP725MSD				95	109	97			100	97	97	NR
	EP726	104	100	99	72	97	82			76	77	81	
	EP726MS	102	113	105		NR					NR		
	EP726MSD	102	118	117									
(1)	LABBLANK	100	97	94	73	83	78			78	74	77	
	Labblank	97	95	87									

* VALUES ARE OUTSIDE OF CONTRACT REQUIRED QC LIMITS

** ADVISORY LIMITS ONLY

Volatiles: 0 out of 15 ; outside of QC limits

Semi-Volatiles: 0 out of 30 ; outside of QC limits

Pesticides: NA out of NA ; outside of QC limits

7/85

Comments: (1) 25NV1041 (VOA) ; D8051 (ABN).
(2) 24NV1111 (VOA)

FORM II

WATER SURROGATE PERCENT RECOVERY SUMMARY

Case No. 8521 Contract Laboratory S-CUBED Contract No. 68-01-7261

	SMO TRAFFIC NO.	VOLATILE: TOLUENE-D8 (88-110)	VOLATILE: BFB (86-115)	VOLATILE: 1,2 DICHLOROETHANE-D4 (76-114)	SEMI-VOLATILE: NITROBENZENE-D5 (35-114)	SEMI-VOLATILE: 2-FLUOROBIPHENYL (43-116)	SEMI-VOLATILE: TERPHENYL-D14 (33-141)			SEMI-VOLATILE: PHENOL-D5 (10-94)	SEMI-VOLATILE: 2-FLUOROPHENOL (21-100)	SEMI-VOLATILE: 2,4,6 TRIBROMOPHENOL (10-123)	PESTICIDE**: DIBUTYLCHLORENDATE (24-154)
	EP727	102	105	105	97	75	73			66	97	79	NR
	EP728	100	102	91	DL(A)	DL	95			79	72	72	154
	EP729	101	104	95	DL	89	76			61	77	65	91
	EP730	99	99	91	DL	DL	DL			DL	DL	DL	108
	EP730MS	98	95	89		NR					NR		115
	EP730MSD	96	95	90									136
	EP731	100	99	89	89	83	89			83	72	89	122
	EP731MS		NR		75	79	75			65	71	83	NR
	EP731MSD				69	76	74			59	67	76	
	EP732	102	103	94	DL	57	48			42	44	48	134
(1)	LAB BLANK	99	98	92	94	80	91			93	93	95	108
(2)	LAB BLANK	99	98	91	68	72	72			62	83	89	
(3)	LAB BLANK	98	99	88		NR					NR		NR
(4)	LAB BLANK	101	101	92									

* VALUES ARE OUTSIDE OF CONTRACT REQUIRED QC LIMITS

** ADVISORY LIMITS ONLY (A) DILUTED OUT.

Volatiles: 0 out of 36 ; outside of QC limits

Semi-Volatiles: 0 out of 60 ; outside of QC limits

Pesticides: 0 out of 8 ; outside of QC limits

Comments: (1) V1N20021 (VOA) ; NV25081 (ABN) ; LAB BLANK 11-23 (PEST).
(2) 23NV1021 (VOA) ; D8021 (ABN)
(3) 24NV1021 (VOA)
(4) 25NV1021 (VOA)

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Case No. 8521 Contractor S-CUBED Contract No. 68-01-7261

Low Level ____ Medium Level X

FRACTION	COMPOUND	CONC. SPIKE ADDED (ug/Kg)	SAMPLE RESULT	CONC. MS	% REC	CONC. MSD	% REC	RPD	QC LIMITS * RPD	QC LIMITS * RECOVERY
VOA SMO SAMPLE NO. EP726	1,1-Dicholorethene	3500	0	3600	103	3800	109	5	22	59-172
	Trichloroethene	2500	0	2400	96	2300	92	4	24	62-137
	Chlorobenzene	3500	0	3600	103	3700	106	3	21	60-133
	Toluene	3300	0	3600	109	3700	112	3	21	59-139
	Benzene	3400	0	3300	97	3400	100	3	21	66-142
B/N SMO SAMPLE NO. EP725	1,2,4-Trichlorobenzene	130×10^3	0	140×10^3	108*	160×10^3	123*	13	23	38-107
	Acenaphthene	130×10^3	0	160×10^3	123	190×10^3	146*	17	19	31-137
	2,4 Dinitrotoluene	130×10^3	0	130×10^3	100*	150×10^3	115*	14	47	28-89
	Pyrene	130×10^3	45×10^3	180×10^3	104	210×10^3	127	15	36	35-142
	N-Nitrosodi-n-Propylamine	130×10^3	0	120×10^3	92	160×10^3	123	29	38	41-126
	1,4-Dichlorobenzene	130×10^3	0	120×10^3	92	140×10^3	108*	15	27	28-104
ACID SMO SAMPLE NO. EP725	Pentachlorophenol	250×10^3	0	290×10^3	116*	330×10^3	132*	13	47	17-109
	Phenol	250×10^3	0	260×10^3	104*	300×10^3	120*	14	35	26-90
	2-Chlorophenol	250×10^3	0	240×10^3	96	280×10^3	112*	15	50	25-102
	4-Chloro-3-Methylphenol	250×10^3	0	280×10^3	112*	320×10^3	128*	13	33	26-103
	4-Nitrophenol	250×10^3	0	320×10^3	128*	330×10^3	132*	3	50	11-114
PEST SMO SAMPLE NO. NA	Lindane								50	46-127
	Heptachlor								31	35-130
	Aldrin								43	34-132
	Dieldrin								38	31-134
	Endrin								45	42-139
	4,4'-DDT								50	23-134

*ASTERISKED VALUES ARE OUTSIDE QC LIMITS.

RPD: VOAs 0 out of 5 ; outside QC limits
B/N 0 out of 6 ; outside QC limits
ACID 0 out of 5 ; outside QC limits
PEST NA out of NA ; outside QC limits

RECOVERY: VOAs 0 out of 10 ; outside QC limits
B/N 6 out of 13 ; outside QC limits
ACID 9 out of 10 ; outside QC limits
PEST NA out of NA ; outside QC limits

Comments: (VOA) SAMPLE SIZE IS 4.0481G, DILT 1:40
(ABN) SAMPLE SIZE IS 1.0G; DILT 1:3 (FVC = 6ML)

8/86

FORM III

WATER MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Case No. 8521 Contractor S-CUBED Contract No. 68-01-7261

FRACTION	COMPOUND	CONC. SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC	CONC. MSD	% REC	RPD	QC LIMITS* RPD	QC LIMITS* RECOVERY
VOA SMO SAMPLE NO. EP730	1,1-Dichloroethene	2900	0	3100	107	3000	103	3	14	61-145
	Trichloroethene	2100	0	2400	114	2400	114	0	14	71-120
	Chlorobenzene	2900	0	2900	100	2900	100	0	13	75-130
	Toluene	2700	2200	5300	115	5300	115	0	13	76-125
	Benzene	2800	1400	4300	104	4500	111	5	11	76-127
B/N SMO SAMPLE NO. EP731	1,2,4-Trichlorobenzene	200	0	180	90	170	85	6	28	39-98
	Acenaphthene	200	0	190	95	190	95	0	31	46-118
	2,4 Dinitrotoluene	200	0	190	95	190	95	0	38	24-96
	Pyrene	200	0	190	95	190	95	0	31	26-127
	N-Nitroso-Di-n-Propylamine	200	0	180	90	170	85	6	38	41-116
	1,4-Dichlorobenzene	200	0	160	80	150	75	6	28	36-97
ACID SMO SAMPLE NO. EP731	Pentachlorophenol	400	0	370	93	360	90	3	50	9-103
	Phenol	400	0	280	70	270	68	4	42	12-89
	2-Chlorophenol	400	0	330	83	310	78	6	40	27-123
	4-Chloro-3-Methylphenol	400	0	340	85	330	83	3	42	23-97
	4-Nitrophenol	400	0	410	103*	360	90*	13	50	10-80
PEST SMO SAMPLE NO. EP730**	Lindane	0.100	0	0.029	29*	0.118	118	121*	15	56-123
	Heptachlor	0.100	0	0.006	6*	0.006	6*	0	20	40-131
	Aldrin	0.100	0	0.000	0*	0.000	0*	0	22	40-120
	Dieldrin	0.25	0	0.00	0*	0.00	0*	0	18	52-126
	Endrin	0.25	0	0.04	17*	0.08	34*	67*	21	56-121
	4,4'-DDT	0.25	0	0.00	0*	0.00	0*	0	27	38-127

*ASTERISKED VALUES ARE OUTSIDE QC LIMITS.

RPD: VOAs 0 out of 5; outside QC limits
B/N 0 out of 6; outside QC limits
ACID 0 out of 5; outside QC limits
PEST 2 out of 6; outside QC limits

RECOVERY: VOAs 0 out of 10; outside QC limits
B/N 0 out of 12; outside QC limits
ACID 2 out of 10; outside QC limits
PEST 11 out of 12; outside QC limits

Comments: (VOA) SAMPLE WAS DILUTED 1:50
(ABN) SAMPLE SIZE IS 1/2 L
** See case narrative

8/85

FORM III

METHOD LANK SUMMARY

Case No. 8521 Region 5 Contractor S-CUBED Contract No. 68-01-7261

FILE ID	DATE OF ANALYSIS	FRACTION	MATRIX	CONC. LEVEL	INST. ID	CAS NUMBER	COMPOUND (HSL, TIC OR UNKNOWN)	CONC.	UNITS	CRDL
23NV1021 ①	11/23/87	VOA	H_2O	Low	VG1	75-09-2	Methylene Chloride	19	ug/l	5
						67-64-1	Acetone	10	ug/l	10
						NA	unknown (scan 48)	12J	ug/l	NA
V1N2021 ②	11/20/87	VOA	H_2O	Low	VG1	75-09-2	Methylene Cheride	4J	ug/l	5
24NV1021 ③	11/24/87	VOA	H_2O	Low	VG1	75-09-2	Methylene Chloride	12	ug/l	5
						67-64-1	Acetone	11	ug/l	10
25NV1021 ④	11/25/87	VOA	H_2O	Low	VG1	75-09-2	Methylene Chloride	5	ug/l	5
						67-64-1	Acetone	7J	ug/l	10
						NA	unknown (scan 47)	10J	ug/l	NA
25NV1041 ⑤	11/25/87	VOA	Soil⑨	Med	VG1	75-09-2	Methylene Chloride	8	ug/l	5
						67-64-1	Acetone	16	ug/l	10
						78-93-3	2-butanone	28	ug/l	10
						108-90-7	Chlorobenzene	2J	ug/l	5
						NA	unknown	12J	ug/l	NA
NV2508I ⑥	11/25/87	ABN	H_2O	low	VG3	84-74-2	Di-n-butyl phthalate	4J	ug/l	10
						NA	unknown (scan 97)	16J	ug/l	NA
D8051 ⑦	12/8/87	ABN	soil	Med	VG3	NA	Nothing Found	NA	NA	NA
D8021 ⑧	12/8/87	ABN	H_2O	Low	VG3	NA	unknown (scan 331)	60J	ug/l	NA
24NV1111	11/24/87	VOA	Soil⑨	M	VG1	7509-2	methylene chloride	6	ug/g	5
24NV1111	11/24/87	VOA	Soil⑨	M	VG1	67-64-1	acetone	17	ug/g	10

Comments: ① VOA Blank, analyzed on 11/23; ② VOA Blank, analyzed on 11/20; ③ VOA Blank, analyzed on 11/24; ④ VOA Blank, analyzed on 11/25; ⑤ VOA Blank for medium level analyses on 11/25; ⑥ ABN Blank, extracted 11/23, analyzed 11/25; ⑦ ABN Blank, ext. 11/25, analyzed 12/8; ⑧ ABN Blank, ext. 11/30, analyzed 12/8

⑨ 5ml H_2O utilized since clean matrix unavailable

METHOD BLANK SUMMARY

Case No. 8521 Region 5 Contractor S-CUBED Contract No. 68-01-6868 7261

FILE ID	DATE OF ANALYSIS	FRACTION	MATRIX	CONC. LEVEL	INST. ID	CAS NUMBER	COMPOUND (NBL, TIC OR UNKNOWN)	CONC.	UNITS	CRDL
LAB BLANK 11-23	12-13-87	PEST	WATER	LOW	HP5890III	—	NONE FOUND	—	—	—

Comments:

FORM IV 7/85

88JG01543

Sample Number: EP725

ORGANICS ANALYSIS DATA SHEET
(Page 1)

Laboratory Name: S-CUBED
Lab Sample ID No: 25NV1051 (VOA), ~~25NV1053 (VOA)~~ 8521 (ABN)
Sample Matrix: SOIL
Data Release Authorized By: ___JN___

Case No: 8521
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 11-20-87

VOLATILE COMPOUNDS

Concentration: Low (Medium) (Circle One)
Date Extracted/Prepared: 11-25-87
Date Analyzed: 11-25-87
Conc/Dil Factor: 0.99 pH: 5.6
Percent Moisture (Not Decanted): 20.9

CAS Number		ug/l or (ug/kg) (Circle One)	CAS Number		ug/l or (ug/kg) (Circle One)
74-87-3	CHLOROMETHANE	1600 U	78-87-5	1,2-DICHLOROPROPANE	780 U
74-83-9	BROMOMETHANE	1600 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	780 U
75-01-4	VINYL CHLORIDE	1600 U	79-01-6	TRICHLOROETHENE	780 U
75-00-3	CHLOROETHANE	1600 U	124-48-1	DIBROMOCHLOROMETHANE	780 U
75-09-2	METHYLENE CHLORIDE	1700 B	79-00-5	1,1,2-TRICHLOROETHANE	780 U
67-64-1	ACETONE	2200 B	71-43-2	BENZENE	~~390 J~~ 780U PW
75-15-0	CARBON DISULFIDE	780 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	780 U
75-35-4	1,1-DICHLOROETHENE	780 U	110-75-8	2-CHLOROETHYLVINYLETHER	1600 U
75-34-3	1,1-DICHLOROETHANE	780 U	75-25-2	BROMOFORM	780 U
156-60-5	TRANS-1,2-DICHLOROETHENE	780 U	591-78-6	2-HEXANONE	~~15000~~ 7800U
67-66-3	CHLOROFORM	780 U	108-10-1	4-METHYL-2-PENTANONE	~~3700~~ 1600U
107-06-2	1,2-DICHLOROETHANE	780 U	127-18-4	TETRACHLOROETHENE	780 U
78-93-3	2-BUTANONE	5500 B	79-34-5	1,1,2,2-TETRACHLOROETHANE	~~680 J~~ 780U
71-55-6	1,1,1-TRICHLOROETHANE	780 U	108-88-3	TOLUENE	~~1200~~ 780U
56-23-5	CARBON TETRACHLORIDE	780 U	108-90-7	CHLOROBENZENE	780 U
108-05-4	VINYL ACETATE	1600 U	100-41-4	ETHYLBENZENE	2900
75-27-4	BROMODICHLOROMETHANE	780 U	100-42-5	STYRENE	780 U
				TOTAL XYLENES	44000

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides) or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Sample Number :
EP725

Laboratory Name: S-CUBED
Case No: 8521

ORGANIC ANALYSIS DATA SHEET
(Page 2)

SEMIVOLATILE COMPOUNDS

Concentration: Low (Medium) (Circle One)
Date Extracted/Prepared: 11-25-87
Date Analyzed: 12-08-87
Conc/Dil Factor: 3.0
Percent Moisture (Decanted): N.R

GPC Clean up X Yes ___No
Separatory Funnel Extraction ___Yes
Continuous Liquid - Liquid Extraction_____Yes

CAS Number		ug/l or (ug/kg) (Circle one)	CAS Number		ug/l or (ug/kg) (circle one)
108-95-2	PHENOL	75000 U	83-32-9	ACENAPHTHENE	75000 U
111-44-4	BIS(2-CHLOROETHYL)ETHER	75000 U	51-28-5	2,4-DINITROPHENOL	360000 U
95-57-8	2-CHLOROPHENOL	75000 U	100-02-7	4-NITROPHENOL	360000 U
541-73-1	1-3,DICHLOROBENZENE	75000 U	132-64-9	DIBENZOFURAN	75000 U
106-46-7	1,4-DICHLOROBENZENE	75000 U	121-14-2	2,4-DINITROTOLUENE	75000 U
100-51-6	BENZYL ALCOHOL	75000 U	606-20-2	2,6-DINITROTOLUENE	75000 U
95-50-1	1,2-DICHLOROBENZENE	75000 U	84-66-2	DIETHYLPHTHALATE	75000 U
95-48-7	2-METHYLPHENOL	75000 U	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	75000 U
39638-32-9	BIS(2-CHLOROISOPROPYL)ETHER	75000 U	86-73-7	FLUORENE	75000 U
106-44-5	4-METHYLPHENOL	75000 U	100-01-6	4-NITROANILINE	360000 U
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	75000 U	534-52-1	4,6-DINITRO-2-METHYLPHENOL	360000 U
67-72-1	HEXACHLOROETHANE	75000 U	86-30-6	N-NITROSODIPHENYLAMINE (1)	75000 U
98-95-3	NITROBENZENE	75000 U	101-55-3	4-BROMOPHENYL-PHENYLETHER	75000 U
78-59-1	ISOPHORONE	75000 U	118-74-1	HEXACHLOROBENZENE	75000 U
88-75-5	2-NITROPHENOL	75000 U	87-86-5	PENTACHLOROPHENOL	360000 U
105-67-9	2,4-DIMETHYLPHENOL	75000 U	85-01-8	PHENANTHRENE	73000 J
65-85-0	BENZOIC ACID	360000 U	120-12-7	ANTHRACENE	75000 U
111-91-1	BIS(2-CHLOROETHOXY)METHANE	75000 U	84-74-2	DI-N-BUTYLPHTHALATE	75000 U
120-83-2	2,4-DICHLOROPHENOL	75000 U	206-44-0	FLUORANTHENE	75000 U
120-82-1	1,2,4-TRICHLOROBENZENE	75000 U	129-00-0	PYRENE	45000 J
91-20-3	NAPHTHALENE	75000 U	85-68-7	BUTYLBENZYLPHTHALATE	75000 U
106-47-8	4-CHLOROANILINE	75000 U	91-94-1	3,3'-DICHLOROBENZIDINE	150000 U
87-68-3	HEXACHLOROBUTADIENE	75000 U	56-55-3	BENZO(a)ANTHRACENE	75000 U
59-50-7	4-CHLORO-3-METHYLPHENOL	75000 U	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	75000 U
91-57-6	2-METHYLNAPHTHALENE	37000 J	218-01-9	CHRYSENE	25000 J
77-47-4	HEXACHLOROCYCLOPENTADIENE	75000 U	117-84-0	DI-N-OCTYL PHTHALATE	75000 U
88-06-2	2,4,6-TRICHLOROPHENOL	75000 U	205-99-2	BENZO(b)FLUORANTHENE	75000 U
95-95-4	2,4,5-TRICHLOROPHENOL	360000 U	207-08-9	BENZO(k)FLUORANTHENE	75000 U
91-58-7	2-CHLORONAPHTHALENE	75000 U	50-32-8	BENZO(a)PYRENE	75000 U
88-74-4	2-NITROANILINE	360000 U	193-39-5	INDENO(1,2,3-CD)PYRENE	75000 U
131-11-3	DIMETHYL PHTHALATE	75000 U	53-70-3	DIBENZ(a,h)ANTHRACENE	75000 U
208-96-8	ACENAPHTHYLENE	75000 U	191-24-2	BENZO(g,h,i)PERYLENE	75000 U
99-09-2	3-NITROANILINE	360000 U			

(1)-Cannot be seperated from diphenylamine.

Laboratory Name S-CUBED

Case No 8521

Sample Number EP725

DBB021 (BNA)
25NV1051 (VOA)

Organics Analysis Data Sheet (Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NA	UNKNOWN HYDROCARBON	BNA	411	130 J
2.		UNKNOWN HYDROCARBON		442	110 J
3.		UNKNOWN HYDROCARBON		524	310 J
4.		UNKNOWN HYDROCARBON		538	230 J
5.		UNKNOWN HYDROCARBON		598	240 J
6.		UNKNOWN HYDROCARBON		625	310 J
7.		UNKNOWN HYDROCARBON		696	230 J
8.		UNKNOWN HYDROCARBON		718	240 J
9.		UNKNOWN HYDROCARBON		805	300 J
10.		UNKNOWN HYDROCARBON		888	390 J
11.		UNKNOWN HYDROCARBON		926	200 J
12.		UNKNOWN HYDROCARBON		966	470 J
13.		UNKNOWN HYDROCARBON		971	270 J
14.		UNKNOWN HYDROCARBON		1041	430 J
15.		UNKNOWN HYDROCARBON		1047	280 J
16.		UNKNOWN HYDROCARBON		1112	440 J
17.		UNKNOWN HYDROCARBON		1179	430 J
18		UNKNOWN HYDROCARBON		1244	440 J
19.		UNKNOWN HYDROCARBON		1306	410 J
20		UNKNOWN	BNA	1365	280 J
21.	NA		VOA	46	26000 J B
22	110-82-7	Cyclohexane (NOT)		258	11000 J
23	NA	UNKNOWN		392	1300 J
24		UNKNOWN		449	2500 J
25		UNKNOWN		462	1300 J
26		UNKNOWN		472	3600 J
27.		UNKNOWN CoHz		492	1500 J
28			VOA	708	3300 J
29.					
30					

88JG01541

Sample Number: EP726

ORGANICS ANALYSIS DATA SHEET
(Page 1)

Laboratory Name: S-CUBED
Lab Sample ID No: 24NV1131(VOA) , D8B611(ABN)
Sample Matrix: SOIL
Data Release Authorized By: _____

Case No: 8521
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 11-20-87

VOLATILE COMPOUNDS
Concentration: Low (Medium) (Circle One)
Date Extracted/Prepared: 11-25-87
Date Analyzed: 11-25-87
Conc/Dil Factor: 0.40 pH: 5.5
Percent Moisture (Not Decanted): 18.5

CAS Number		ug/l or (ug/kg) (Circle One)	CAS Number		ug/l or (ug/kg) (Circle One)
74-87-3	CHLOROMETHANE	610 U	78-87-5	1,2-DICHLOROPROPANE	300 U
74-83-9	BROMOMETHANE	610 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	300 U
75-01-4	VINYL CHLORIDE	610 U	79-01-6	TRICHLOROETHENE	300 U
75-00-3	CHLOROETHANE	610 U	124-48-1	DIBROMOCHLOROMETHANE	300 U
75-09-2	METHYLENE CHLORIDE	710 B	79-00-5	1,1,2-TRICHLOROETHANE	300 U
67-64-1	ACETONE	2800 B	71-43-2	BENZENE	300 U
75-15-0	CARBON DISULFIDE	300 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	300 U
75-35-4	1,1-DICHLOROETHENE	300 U	110-75-8	2-CHLOROETHYLVINYLETHER	610 U
75-34-3	1,1-DICHLOROETHANE	300 U	75-25-2	BROMOFORM	300 U
156-60-5	TRANS-1,2-DICHLOROETHENE	300 U	591-78-6	2-HEXANONE	610 U
67-66-3	CHLOROFORM	430	108-10-1	4-METHYL-2-PENTANONE	610 U
107-06-2	1,2-DICHLOROETHANE	300 U	127-18-4	TETRACHLOROETHENE	300 U
78-93-3	2-BUTANONE	7100	79-34-5	1,1,2,2-TETRACHLOROETHANE	300 U
71-55-6	1,1,1-TRICHLOROETHANE	300 U	108-88-3	TOLUENE	300 U
56-23-5	CARBON TETRACHLORIDE	300 U	108-90-7	CHLOROBENZENE	300 U
108-05-4	VINYL ACETATE	610 U	100-41-4	ETHYLBENZENE	300 U
75-27-4	BROMODICHLOROMETHANE	300 U	100-42-5	STYRENE	300 U
				TOTAL XYLENES	300 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Laboratory Name: S-CUBED
Case No: 8521

Sample Number : EP726

ORGANIC ANALYSIS DATA SHEET
(Page 2)

SEMIVOLATILE COMPOUNDS

Concentration: Low (Medium) (Circle One)
Date Extracted/Prepared: 11-25-87
Date Analyzed: 12-08-87
Conc/Dil Factor: 3.0
Percent Moisture (Decanted): N.R

GPC Clean up X Yes ___No
Separatory Funnel Extraction ___Yes
Continuous Liquid - Liquid Extraction_____Yes

CAS Number		ug/l or (ug/kg) (Circle one)	CAS Number		ug/l or (ug/kg) (circle one)
108-95-2	PHENOL	73000 U	83-32-9	ACENAPHTHENE	73000 U
111-44-4	BIS(2-CHLOROETHYL)ETHER	73000 U	51-28-5	2,4-DINITROPHENOL	350000 U
95-57-8	2-CHLOROPHENOL	73000 U	100-02-7	4-NITROPHENOL	350000 U
541-73-1	1-3,DICHLOROBENZENE	73000 U	132-64-9	DIBENZOFURAN	73000 U
106-46-7	1,4-DICHLOROBENZENE	73000 U	121-14-2	2,4-DINITROTOLUENE	73000 U
100-51-6	BENZYL ALCOHOL	73000 U	606-20-2	2,6-DINITROTOLUENE	73000 U
95-50-1	1,2-DICHLOROBENZENE	73000 U	84-66-2	DIETHYLPHTHALATE	73000 U
95-48-7	2-METHYLPHENOL	73000 U	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	73000 U
39638-32-9	BIS(2-CHLOROISOPROPYL)ETHER	73000 U	86-73-7	FLUORENE	73000 U
106-44-5	4-METHYLPHENOL	73000 U	100-01-6	4-NITROANILINE	350000 U
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	73000 U	534-52-1	4,6-DINITRO-2-METHYLPHENOL	350000 U
67-72-1	HEXACHLOROETHANE	73000 U	86-30-6	N-NITROSODIPHENYLAMINE (1)	73000 U
98-95-3	NITROBENZENE	73000 U	101-55-3	4-BROMOPHENYL-PHENYLETHER	73000 U
78-59-1	ISOPHORONE	73000 U	118-74-1	HEXACHLOROBENZENE	73000 U
88-75-5	2-NITROPHENOL	73000 U	87-86-5	PENTACHLOROPHENOL	350000 U
105-67-9	2,4-DIMETHYLPHENOL	73000 U	85-01-8	PHENANTHRENE	73000 U
65-85-0	BENZOIC ACID	350000 U	120-12-7	ANTHRACENE	73000 U
111-91-1	BIS(2-CHLOROETHOXY)METHANE	73000 U	84-74-2	DI-N-BUTYLPHTHALATE	73000 U
120-83-2	2,4-DICHLOROPHENOL	73000 U	206-44-0	FLUORANTHENE	73000 U
120-82-1	1,2,4-TRICHLOROBENZENE	73000 U	129-00-0	PYRENE	73000 U
91-20-3	NAPHTHALENE	73000 U	85-68-7	BUTYLBENZYLPHTHALATE	73000 U
106-47-8	4-CHLOROANILINE	73000 U	91-94-1	3,3'-DICHLOROBENZIDINE	150000 U
87-68-3	HEXACHLOROBUTADIENE	73000 U	56-55-3	BENZO(a)ANTHRACENE	73000 U
59-50-7	4-CHLORO-3-METHYLPHENOL	73000 U	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	73000 U
91-57-6	2-METHYLNAPHTHALENE	73000 U	218-01-9	CHRYSENE	21000 J
77-47-4	HEXACHLOROCYCLOPENTADIENE	73000 U	117-84-0	DI-N-OCTYL PHTHALATE	73000 U
88-06-2	2,4,6-TRICHLOROPHENOL	73000 U	205-99-2	BENZO(b)FLUORANTHENE	73000 U
95-95-4	2,4,5-TRICHLOROPHENOL	350000 U	207-08-9	BENZO(k)FLUORANTHENE	73000 U
91-58-7	2-CHLORONAPHTHALENE	73000 U	50-32-8	BENZO(a)PYRENE	73000 U
88-74-4	2-NITROANILINE	350000 U	193-39-5	INDENO(1,2,3-CD)PYRENE	73000 U
131-11-3	DIMETHYL PHTHALATE	73000 U	53-70-3	DIBENZ(a,h)ANTHRACENE	73000 U
208-96-8	ACENAPHTHYLENE	73000 U	191-24-2	BENZO(g,h,i)PERYLENE	73000 U
99-09-2	3-NITROANILINE	350000 U			

(1)-Cannot be seperated from diphenylamine.

Laboratory Name S-CUBED

Case No 8521

Sample Number EP-726

D8501 (BNA)
24NV1131 (VOA)

Organics Analysis Data Sheet (Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NA	UNKNOWN HYDROCARBON	BNA	717	100 J
2.		UNKNOWN HYDROCARBON		804	270 J
3.		UNKNOWN HYDROCARBON		887	470 J
4.		UNKNOWN HYDROCARBON		926	210 J
5.		UNKNOWN HYDROCARBON		966	580 J
6.		UNKNOWN HYDROCARBON		970	290 J
7.		UNKNOWN HYDROCARBON		1040	520 J
8.		UNKNOWN HYDROCARBON		1047	300 J
9.		UNKNOWN HYDROCARBON		1106	110 J
10.		UNKNOWN HYDROCARBON		1111	530 J
11.		UNKNOWN		1179	500 J
12.		UNKNOWN		1207	110 J
13.		UNKNOWN HYDROCARBON		1228	140 J
14.		UNKNOWN		1244	440 J
15.		UNKNOWN HYDROCARBON		1261	120 J
16.		UNKNOWN HYDROCARBON		1306	360 J
17.		UNKNOWN HYDROCARBON		1365	280 J
18		UNKNOWN HYDROCARBON		1422	170 J
19.		UNKNOWN HYDROCARBON		1477	120 J
20.		UNKNOWN	BNA	1531	100 J
21.	NA	cyclohexane (DOT	VOA	74	1000 J
22	110-82-7	UNKNOWN		258	1400 J
23	NA	UNKNOWN		271	870 J
24		UNKNOWN		306	480 J
25		UNKNOWN		413	470 J
26		UNKNOWN		471	1800 J
27.		UNKNOWN C_8H_{12}		511	1200 J
28		UNKNOWN		546	510 J
29.		UNKNOWN C_8H_{12}		606	900 J
30			VOA	668	4100 J

88JG01545

Sample Number:
EP727

ORGANICS ANALYSIS DATA SHEET
(Page 1)

Laboratory Name: S-CUBED
Lab Sample ID No: V1N20101 (WA), D1B011 (CA BW)
Sample Matrix: WATER
Data Release Authorized By: ___N_____

Case No: 6521
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 11-20-87

VOLATILE COMPOUNDS
Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 11-21-87
Date Analyzed: 11-21-87
Conc/Dil Factor: 10 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		(ug/l) or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	100 U
74-83-9	BROMOMETHANE	100 U
75-01-4	VINYL CHLORIDE	100 U
75-00-3	CHLOROETHANE	100 U
75-09-2	METHYLENE CHLORIDE	110 B
67-64-1	ACETONE	1800
75-15-0	CARBON DISULFIDE	50 U
75-35-4	1,1-DICHLOROETHENE	50 U
75-34-3	1,1-DICHLOROETHANE	50 U
156-60-5	TRANS-1,2-DICHLOROETHENE	50 U
67-66-3	CHLOROFORM	50 U
107-06-2	1,2-DICHLOROETHANE	50 U
78-93-3	2-BUTANONE	400
71-55-6	1,1,1-TRICHLOROETHANE	50 U
56-23-5	CARBON TETRACHLORIDE	50 U
108-05-4	VINYL ACETATE	100 U
75-27-4	BROMODICHLOROMETHANE	50 U

CAS Number		(ug/l) or ug/kg (Circle One)
78-87-5	1,2-DICHLOROPROPANE	50 U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	50 U
79-01-6	TRICHLOROETHENE	50 U
124-48-1	DIBROMOCHLOROMETHANE	50 U
79-00-5	1,1,2-TRICHLOROETHANE	50 U
71-43-2	BENZENE	50 U
10061-01-5	CIS-1,3-DICHLOROPROPENE	50 U
110-75-8	2-CHLOROETHYLVINYLETHER	100 U
75-25-2	BROMOFORM	50 U
591-78-6	2-HEXANONE	100 U
108-10-1	4-METHYL-2-PENTANONE	100 U
127-18-4	TETRACHLOROETHENE	50 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	50 U
108-88-3	TOLUENE	48 J
108-90-7	CHLOROBENZENE	50 U
100-41-4	ETHYLBENZENE	46 J
100-42-5	STYRENE	50 U
	TOTAL XYLENES	370

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Sample Number
EP727

Laboratory Name: S-CUBED
Case No: 8521

ORGANIC ANALYSIS DATA SHEET
(Page 2)

SEMIVOLATILE COMPOUNDS

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 11-23-87
Date Analyzed: 12-01-87
Conc/Dil Factor: 5.0
Percent Moisture (Decanted): N.R

GPC Clean up ___Yes X No
Separatory Funnel Extraction ___Yes
Continuous Liquid - Liquid Extraction_____X_____Yes

CAS Number		(ug/l) or ug/kg (Circle one)
108-95-2	PHENOL	330
111-44-4	BIS(2-CHLOROETHYL)ETHER	50 U
95-57-8	2-CHLOROPHENOL	50 U
541-73-1	1-3,DICHLOROBENZENE	50 U
106-46-7	1,4-DICHLOROBENZENE	50 U
100-51-6	BENZYL ALCOHOL	50 U
95-50-1	1,2-DICHLOROBENZENE	50 U
95-48-7	2-METHYLPHENOL	84
39638-32-9	BIS(2-CHLORDISOPROPYL)ETHER	50 U
106-44-5	4-METHYLPHENOL	260
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	50 U
67-72-1	HEXACHLOROETHANE	50 U
98-95-3	NITROBENZENE	50 U
78-59-1	ISOPHORONE	50 U
88-75-5	2-NITROPHENOL	50 U
105-67-9	2,4-DIMETHYLPHENOL	50 U
65-85-0	BENZOIC ACID	250 U
111-91-1	BIS(2-CHLOROETHOXY)METHANE	50 U
120-83-2	2,4-DICHLOROPHENOL	50 U
120-82-1	1,2,4-TRICHLOROBENZENE	50 U
91-20-3	NAPHTHALENE	120
106-47-8	4-CHLOROANILINE	50 U
87-68-3	HEXACHLOROBUTADIENE	50 U
59-50-7	4-CHLORO-3-METHYLPHENOL	50 U
91-57-6	2-METHYLNAPHTHALENE	60
77-47-4	HEXACHLOROCYCLOPENTADIENE	50 U
88-06-2	2,4,6-TRICHLOROPHENOL	50 U
95-95-4	2,4,5-TRICHLOROPHENOL	250 U
91-58-7	2-CHLORONAPHTHALENE	50 U
88-74-4	2-NITROANILINE	250 U
131-11-3	DIMETHYL PHTHALATE	50 U
208-96-8	ACENAPHTHYLENE	50 U
99-09-2	3-NITROANILINE	250 U

CAS Number		(ug/l) or ug/kg (Circle one)
83-32-9	ACENAPHTHENE	50 U
51-28-5	2,4-DINITROPHENOL	250 U
100-02-7	4-NITROPHENOL	250 U
132-64-9	DIBENZOFURAN	50 U
121-14-2	2,4-DINITROTOLUENE	50 U
606-20-2	2,6-DINITROTOLUENE	50 U
84-66-2	DIETHYLPHTHALATE	50 U
7005-72-3	4-CHLOROPHENYL-PHENYLETHER	50 U
86-73-7	FLUORENE	50 U
100-01-6	4-NITROANILINE	250 U
534-52-1	4,6-DINITRO-2-METHYLPHENOL	250 U
86-30-6	N-NITROSODIPHENYLAMINE (1)	50 U
101-55-3	4-BROMOPHENYL-PHENYLETHER	50 U
118-74-1	HEXACHLOROBENZENE	50 U
87-86-5	PENTACHLOROPHENOL	250 U
85-01-8	PHENANTHRENE	50 U
120-12-7	ANTHRACENE	50 U
84-74-2	DI-N-BUTYLPHTHALATE	50 U
206-44-0	FLUORANTHENE	50 U
129-00-0	PYRENE	50 U
85-68-7	BUTYLBENZYLPHTHALATE	50 U
91-94-1	3,3'-DICHLOROBENZIDINE	100 U
56-55-3	BENZO(a)ANTHRACENE	50 U
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	50 U
218-01-9	CHRYSENE	50 U
117-84-0	DI-N-OCTYL PHTHALATE	50 U
205-99-2	BENZO(b)FLUORANTHENE	50 U
207-08-9	BENZO(k)FLUORANTHENE	50 U
50-32-8	BENZO(a)PYRENE	50 U
193-39-5	INDENO(1,2,3-CD)PYRENE	50 U
53-70-3	DIBENZ(a,h)ANTHRACENE	50 U
191-24-2	BENZO(g,h,i)PERYLENE	50 U

(1)-Cannot be seperated from diphenylamine.

Laboratory Name S-CUBED

Case No 8521

Sample Number: EP7Z7

DIB011 (BNA)
VIN20101 (VOA)

Organics Analysis Data Sheet (Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NA	UNKNOWN Xylene	BNA	20	180 J
2.		UNKNOWN C_3H_6 sub. benzene		205	160 J
3.		UNKNOWN		214	240 J
4.		UNKNOWN C_3H_6 sub benzene		255	380 J
5.		UNKNOWN		331	140 J
6.		UNKNOWN		351	150 J
7.		UNKNOWN		391	290 J
8.		UNKNOWN		422	160 J
9.		UNKNOWN		497	110 J
10.		UNKNOWN		525	230 J
11.		UNKNOWN		540	260 J
12.		UNKNOWN		578	86 J
13.		UNKNOWN HYDROCARBON		599	110 J
14.		UNKNOWN		626	81 J
15.		UNKNOWN HYDROCARBON		642	85 J
16.		UNKNOWN HYDROCARBON		860	75 J
17.		UNKNOWN		927	79 J
18.		UNKNOWN HYDROCARBON		943	170 J
19.		UNKNOWN HYDROCARBON		971	91 J
20.		UNKNOWN	BNA	1048	87 J
21.		UNKNOWN	VOA	202	820 J
22.		UNKNOWN	↕	412	48 J
23.			VOA	706	60 J
24.					
25.					
26.					
27.					
28.					
29.					
30.					

88JG01S47

: Sample Number:
EP728 :

ORGANICS ANALYSIS DATA SHEET
(Page 1)

Laboratory Name: S-CUBED
Lab Sample ID No: VIN20111 (VBA), D8B041 (ABW)
Sample Matrix: WATER
Data Release Authorized By: ____

Case No: 8521
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 11-20-87

VOLATILE COMPOUNDS

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 11-21-87
Date Analyzed: 11-21-87
Conc/Dil Factor: 500 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		(ug/l) or ug/kg (Circle One)	CAS Number		(ug/l) or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	5000 U	78-87-5	1,2-DICHLOROPROPANE	2500 U
74-83-9	BROMOMETHANE	5000 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	2500 U
75-01-4	VINYL CHLORIDE	5000 U	79-01-6	TRICHLOROETHENE	2500 U
75-00-3	CHLOROETHANE	5000 U	124-48-1	DIBROMOCHLOROMETHANE	2500 U
75-09-2	METHYLENE CHLORIDE	2700 B	79-00-5	1,1,2-TRICHLOROETHANE	2500 U
67-64-1	ACETONE	7300	71-43-2	BENZENE	1300 J
75-15-0	CARBON DISULFIDE	2500 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	2500 U
75-35-4	1,1-DICHLOROETHENE	2500 U	110-75-8	2-CHLOROETHYLVINYLETHER	5000 U
75-34-3	1,1-DICHLOROETHANE	2500 U	75-25-2	BROMOFORM	2500 U
156-60-5	TRANS-1,2-DICHLOROETHENE	2500 U	591-78-6	2-HEXANONE	5000 U
67-66-3	CHLOROFORM	2500 U	108-10-1	4-METHYL-2-PENTANONE	5000 U
107-06-2	1,2-DICHLOROETHANE	2500 U	127-18-4	TETRACHLOROETHENE	2500 U
78-93-3	2-BUTANONE	5000 U	79-34-5	1,1,2,2-TETRACHLOROETHANE	2500 U
71-55-6	1,1,1-TRICHLOROETHANE	2500 U	108-88-3	TOLUENE	4900
56-23-5	CARBON TETRACHLORIDE	2500 U	108-90-7	CHLOROBENZENE	2500 U
108-05-4	VINYL ACETATE	5000 U	100-41-4	ETHYLBENZENE	1500 J
75-27-4	BROMODICHLOROMETHANE	2500 U	100-42-5	STYRENE	2500 U
				TOTAL XYLENES	9400

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged. However, the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (eg. 10U) based on necessary concentration/dilution action. (this is not necessarily the instrument detection limit.) The footnotes should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value: This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) . If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Sample Number
EP728

Laboratory Name: S-CUBED
Case No: B521

ORGANIC ANALYSIS DATA SHEET
(Page 2)

SEMIVOLATILE COMPOUNDS

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 11-23-87
Date Analyzed: 12-08-87
Conc/Dil Factor: 40
Percent Moisture (Decanted): N.R

GPC Clean up ___Yes X___No
Separatory Funnel Extraction ___Yes
Continuous Liquid - Liquid Extraction_____X_____Yes

CAS Number		(ug/l) or ug/kg (Circle one)
108-95-2	PHENOL	910
111-44-4	BIS(2-CHLOROETHYL)ETHER	400 U
95-57-8	2-CHLOROPHENOL	400 U
541-73-1	1-3,DICHLOROBENZENE	400 U
106-46-7	1,4-DICHLOROBENZENE	400 U
100-51-6	BENZYL ALCOHOL	400 U
95-50-1	1,2-DICHLOROBENZENE	400 U
95-48-7	2-METHYLPHENOL	930
39638-32-9	BIS(2-CHLOROISOPROPYL)ETHER	400 U
106-44-5	4-METHYLPHENOL	1200
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	400 U
67-72-1	HEXACHLOROETHANE	400 U
98-95-3	NITROBENZENE	400 U
78-59-1	ISOPHORONE	400 U
88-75-5	2-NITROPHENOL	400 U
105-67-9	2,4-DIMETHYLPHENOL	1600
65-85-0	BENZOIC ACID	2000 U
111-91-1	BIS(2-CHLOROETHOXY)METHANE	400 U
120-83-2	2,4-DICHLOROPHENOL	400 U
120-82-1	1,2,4-TRICHLOROBENZENE	400 U
91-20-3	NAPHTHALENE	1900
106-47-8	4-CHLOROANILINE	400 U
87-68-3	HEXACHLOROBUTADIENE	400 U
59-50-7	4-CHLORO-3-METHYLPHENOL	400 U
91-57-6	2-METHYLNAPHTHALENE	6000
77-47-4	HEXACHLOROCYCLOPENTADIENE	400 U
88-06-2	2,4,6-TRICHLOROPHENOL	400 U
95-95-4	2,4,5-TRICHLOROPHENOL	2000 U
91-58-7	2-CHLORONAPHTHALENE	400 U
88-74-4	2-NITROANILINE	2000 U
131-11-3	DIMETHYL PHTHALATE	400 U
208-96-8	ACENAPHTHYLENE	400 U
99-09-2	3-NITROANILINE	2000 U

CAS Number		(ug/l) or ug/kg (Circle one)
83-32-9	ACENAPHTHENE	400 U
51-28-5	2,4-DINITROPHENOL	2000 U
100-02-7	4-NITROPHENOL	2000 U
132-64-9	DIBENZOFURAN	400 U
121-14-2	2,4-DINITROTOLUENE	400 U
606-20-2	2,6-DINITROTOLUENE	400 U
84-66-2	DIETHYLPHTHALATE	400 U
7005-72-3	4-CHLOROPHENYL-PHENYLETHER	400 U
86-73-7	FLUORENE	430
100-01-6	4-NITROANILINE	2000 U
534-52-1	4,6-DINITRO-2-METHYLPHENOL	2000 U
86-30-6	N-NITROSODIPHENYLAMINE (1)	400 U
101-55-3	4-BROMOPHENYL-PHENYLETHER	400 U
118-74-1	HEXACHLOROBENZENE	400 U
87-86-5	PENTACHLOROPHENOL	2000 U
85-01-8	PHENANTHRENE	1400
120-12-7	ANTHRACENE	130 J
84-74-2	DI-N-BUTYLPHTHALATE	400 U
206-44-0	FLUORANTHENE	400 U
129-00-0	PYRENE	120 J
85-68-7	BUTYLBENZYLPHTHALATE	400 U
91-94-1	3,3'-DICHLOROBENZIDINE	800 U
56-55-3	BENZO(a)ANTHRACENE	400 U
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	400 U
218-01-9	CHRYSENE	92 J
117-84-0	DI-N-OCTYL PHTHALATE	400 U
205-99-2	BENZO(b)FLUORANTHENE	400 U
207-08-9	BENZO(k)FLUORANTHENE	400 U
50-32-8	BENZO(a)PYRENE	400 U
193-39-5	INDENO(1,2,3-CD)PYRENE	400 U
53-70-3	DIBENZ(a,h)ANTHRACENE	400 U
191-24-2	BENZO(g,h,i)PERYLENE	400 U

(1)-Cannot be seperated from diphenylamine.

Sample Number
EP 728

Laboratory Name: S-Cubed
Case No.: 3521

ORGANICS ANALYSIS DATA
(Page 3)

Pesticide/PCBs

GPC Cleanup ___Yes X NO
Separatory Funnel Extraction ___Yes
Continuous Liquid-Liquid Extraction X Yes

Concentration: LOW
Date Extracted/Prepared: 11-23-87
Date Analyzed: 12-13-87
Conc/Dil Factor: 10.00

(ug/l) or ug/Kg
(Circle One)

CAS # Number		
319-84-6	ALPHA-BHC	0.50 u
319-85-7	BETA-BHC	0.50 u
319-86-8	DELTA-BHC	0.50 u
58-89-9	GAMMA-BHC (LINDANE)	0.50 u
76-44-8	HEPTACHLOR	0.48 J **
309-00-2	ALDRIN	0.30 J **
1024-57-3	HEPTACHLOR EPOXIDE	0.50 u
959-98-8	ENDOSULFAN I	1.0 u
60-57-1	DIELDRIN	1.0 u
72-55-9	4,4'-DDE	1.0 u
72-20-8	ENDRIN	1.0 u
33213-65-9	ENDOSULFAN II	1.0 u
72-54-8	4,4'-DDD	1.0 u
7421-93-4	ENDRIN ALDEHYDE	1.0 u
1031-07-8	ENDOSULFAN SULFATE	5.0 u
50-29-3	4,4'-DDT	1.0 u
72-43-5	METHOXYCHLOR	5.0 u
53494-70-5	ENDRIN KETONE	10 u
57-74-9	CHLORDANE	5.0 u
8001-35-2	TOXAPHENE	5.0 u
12674-11-2	AROCLOR-1016	5.0 u
11104-28-2	AROCLOR-1221	5.0 u
11141-16-5	AROCLOR-1232	5.0 u
53469-21-9	AROCLOR-1242	10 u
12672-29-6	AROCLOR-1248	10 u
11097-69-1	AROCLOR-1254	
11096-82-5	AROCLOR-1260	

Volume of water extracted (ml):	1000
Weight of sample extracted (g):	N.A.
Volume of total extract (ml):	10.00
Volume of extract injected (ul):	1.00

** CONFIRMED BY GC DUAL COLUMN CONFIRMATION

Laboratory Name E-CUBED

Case No 8521

Sample No. EP728
DB8041 (BNA)
VIN2011 (VOA)

Organics Analysis Data Sheet (Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	N/A	UNKNOWN HYDROCARBON	BNA	277	12000 J
2.		UNKNOWN HYDROCARBON		412	7900 J
3.		UNKNOWN HYDROCARBON		525	9200 J
4.		UNKNOWN		617	4900 J
5.		UNKNOWN HYDROCARBON		676	66000 J
6.		UNKNOWN HYDROCARBON		720	8200 J
7.		UNKNOWN HYDROCARBON		807	8600 J
8.		UNKNOWN		844	3200 J
9.		UNKNOWN HYDROCARBON		890	9400 J
10.		UNKNOWN HYDROCARBON		927	18000 J
11.		UNKNOWN HYDROCARBON		968	9400 J
12.		UNKNOWN HYDROCARBON		972	6100 J
13.		UNKNOWN HYDROCARBON		1041	8000 J
14.		UNKNOWN HYDROCARBON		1047	4200 J
15.		UNKNOWN HYDROCARBON		1112	8200 J
16.		UNKNOWN HYDROCARBON		1179	7000 J
17.		UNKNOWN HYDROCARBON		1243	6700 J
18		UNKNOWN HYDROCARBON		1305	6000 J
19.		UNKNOWN HYDROCARBON		1364	4000 J
20.		UNKNOWN	BNA	1422	3000 J
21.		UNKNOWN C_6H_{12}	VOA	71	4900 J
22.		UNKNOWN	↕	.679	26000 J
23			VOA	.705	26000 J
24					
25.					
26					
27.					
28					
29.					
30					

88JG01S48

Sample Number:
EP729

ORGANICS ANALYSIS DATA SHEET
(Page 1)

Laboratory Name: S-CUBED
Lab Sample ID No: 23NV1101(CA9A1, D1B031(AB2)
Sample Matrix: WATER
Data Release Authorized By: _____

Case No: 8521
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 11-20-87

VOLATILE COMPOUNDS

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 11-23-87
Date Analyzed: 11-23-87
Conc/Dil Factor: 20 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		(ug/l) or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	200 U
74-83-9	BROMOMETHANE	200 U
75-01-4	VINYL CHLORIDE	200 U
75-00-3	CHLOROETHANE	200 U
75-09-2	METHYLENE CHLORIDE	66 J B
67-64-1	ACETONE	1100 B
75-15-0	CARBON DISULFIDE	100 U
75-35-4	1,1-DICHLOROETHENE	100 U
75-34-3	1,1-DICHLOROETHANE	100 U
156-60-5	TRANS-1,2-DICHLOROETHENE	100 U
67-66-3	CHLOROFORM	100 U
107-06-2	1,2-DICHLOROETHANE	100 U
78-93-3	2-BUTANONE	610
71-55-6	1,1,1-TRICHLOROETHANE	100 U
56-23-5	CARBON TETRACHLORIDE	100 U
108-05-4	VINYL ACETATE	200 U
75-27-4	BROMODICHLOROMETHANE	100 U

CAS Number		(ug/l) or ug/kg (Circle One)
78-87-5	1,2-DICHLOROPROPANE	100 U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	100 U
79-01-6	TRICHLOROETHENE	100 U
124-48-1	DIBROMOCHLOROMETHANE	100 U
79-00-5	1,1,2-TRICHLOROETHANE	100 U
71-43-2	BENZENE	820
10061-01-5	CIS-1,3-DICHLOROPROPENE	100 U
110-75-8	2-CHLOROETHYLVINYLETHER	200 U
75-25-2	BROMOFORM	100 U
591-78-6	2-HEXANONE	200 U
108-10-1	4-METHYL-2-PENTANONE	200 U
127-18-4	TETRACHLOROETHENE	100 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	100 U
108-88-3	TOLUENE	1300
108-90-7	CHLOROBENZENE	48 J
100-41-4	ETHYLBENZENE	180
100-42-5	STYRENE	100 U
	TOTAL XYLENES	850

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Sample Number :
EP729 :

Laboratory Name: S-CUBED
Case No: 8521

ORGANIC ANALYSIS DATA SHEET
(Page 2)

SEMIVOLATILE COMPOUNDS

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 11-23-87
Date Analyzed: 12-01-87
Conc/Dil Factor: 8000
Percent Moisture (Decanted): N.R

GPC Clean up ___Yes K No
Separatory Funnel Extraction ___Yes
Continuous Liquid - Liquid Extraction_____X_____Yes

CAS Number		(ug/l) or ug/kg (Circle one)
108-95-2	PHENOL	80000 U
111-44-4	BIS(2-CHLOROETHYL)ETHER	80000 U
95-57-8	2-CHLOROPHENOL	80000 U
541-73-1	1-3,DICHLOROBENZENE	80000 U
106-46-7	1,4-DICHLOROBENZENE	80000 U
100-51-6	BENZYL ALCOHOL	80000 U
95-50-1	1,2-DICHLOROBENZENE	80000 U
95-48-7	2-METHYLPHENOL	80000 U
39638-32-9	BIS(2-CHLOROISOPROPYL)ETHER	80000 U
106-44-5	4-METHYLPHENOL	80000 U
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	80000 U
67-72-1	HEXACHLOROETHANE	80000 U
98-95-3	NITROBENZENE	80000 U
78-59-1	ISOPHORONE	80000 U
88-75-5	2-NITROPHENOL	80000 U
105-67-9	2,4-DIMETHYLPHENOL	80000 U
65-85-0	BENZOIC ACID	400000 U
111-91-1	BIS(2-CHLOROETHOXY)METHANE	80000 U
120-83-2	2,4-DICHLOROPHENOL	80000 U
120-82-1	1,2,4-TRICHLOROBENZENE	80000 U
91-20-3	NAPHTHALENE	760000
106-47-8	4-CHLOROANILINE	80000 U
87-68-3	HEXACHLOROBUTADIENE	80000 U
59-50-7	4-CHLORO-3-METHYLPHENOL	80000 U
91-57-6	2-METHYLNAPHTHALENE	2300000
77-47-4	HEXACHLOROCYCLOPENTADIENE	80000 U
88-06-2	2,4,6-TRICHLOROPHENOL	80000 U
95-95-4	2,4,5-TRICHLOROPHENOL	400000 U
91-58-7	2-CHLORONAPHTHALENE	80000 U
88-74-4	2-NITROANILINE	400000 U
131-11-3	DIMETHYL PHTHALATE	80000 U
208-96-8	ACENAPHTHYLENE	80000 U
99-09-2	3-NITROANILINE	400000 U

CAS Number		(ug/l) or ug/kg (Circle one)
83-32-9	ACENAPHTHENE	80000 U
51-28-5	2,4-DINITROPHENOL	400000 U
100-02-7	4-NITROPHENOL	400000 U
132-64-9	DIBENZOFURAN	80000 U
121-14-2	2,4-DINITROTOLUENE	80000 U
606-20-2	2,6-DINITROTOLUENE	80000 U
84-66-2	DIETHYLPHTHALATE	80000 U
7005-72-3	4-CHLOROPHENYL-PHENYLETHER	80000 U
86-73-7	FLUORENE	170000
100-01-6	4-NITROANILINE	400000 U
534-52-1	4,6-DINITRO-2-METHYLPHENOL	400000 U
86-30-6	N-NITROSODIPHENYLAMINE (1)	80000 U
101-55-3	4-BROMOPHENYL-PHENYLETHER	80000 U
118-74-1	HEXACHLOROBENZENE	80000 U
87-86-5	PENTACHLOROPHENOL	400000 U
85-01-8	PHENANTHRENE	550000
120-12-7	ANTHRACENE	47000 J
84-74-2	DI-N-BUTYLPHTHALATE	80000 U
206-44-0	FLUORANTHENE	80000 U
129-00-0	PYRENE	47000 J
85-68-7	BUTYLBENZYLPHTHALATE	80000 U
91-94-1	3,3'-DICHLOROBENZIDINE	160000 U
56-55-3	BENZO(a)ANTHRACENE	80000 U
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	80000 U
218-01-9	CHRYSENE	35000 J
117-84-0	DI-N-OCTYL PHTHALATE	80000 U
205-99-2	BENZO(b)FLUORANTHENE	80000 U
207-08-9	BENZO(k)FLUORANTHENE	80000 U
50-32-8	BENZO(a)PYRENE	80000 U
193-39-5	INDENO(1,2,3-CD)PYRENE	80000 U
53-70-3	DIBENZ(a,h)ANTHRACENE	80000 U
191-24-2	BENZO(g,h,i)PERYLENE	80000 U

(1)-Cannot be seperated from diphenylamine.

Laboratory Name: S-Cubed
Case No.: 8521

Sample Number
EP 729

ORGANICS ANALYSIS DATA
(Page 3)

Pesticide/PCBs

Concentration: LOW
Date Extracted/Prepared: 11-23-87
Date Analyzed: 12-13-87
Conc/Dil Factor: 1 000

GPC Cleanup ___Yes X NO
Separatory Funnel Extraction ___Yes
Continuous Liquid-Liquid Extraction X Yes

CAS # Number		(ug/l) or ug/Kg (Circle One)	
319-84-6	ALPHA-BHC	190	**
319-85-7	BETA-BHC	50	u
319-86-8	DELTA-BHC	50	u
58-89-9	GAMMA-BHC (LINDANE)	50	u
76-44-8	HEPTACHLOR	600	*, **
309-00-2	ALDRIN	140	*, **
1024-57-3	HEPTACHLOR EPOXIDE	50	u
959-98-8	ENDOSULFAN I	100	u
60-57-1	DIELDRIN	100	u
72-55-9	4,4'-DDE	720	*, **
72-20-8	ENDRIN	100	u
33213-65-9	ENDOSULFAN II	100	u
72-54-8	4,4'-DDD	100	u
7421-93-4	ENDRIN ALDEHYDE	100	u
1031-07-8	ENDOSULFAN SULFATE	100	u
50-29-3	4,4'-DDT	500	u
72-43-5	METHOXYCHLOR	100	u
53494-70-5	ENDRIN KETONE	500	u
57-74-9	CHLORDANE	1000	u
8001-35-2	TOXAPHENE	500	u
12674-11-2	AROCLOR-1016	500	u
11104-28-2	AROCLOR-1221	500	u
11141-16-5	AROCLOR-1232	500	u
53469-21-9	AROCLOR-1242	500	u
12672-29-6	AROCLOR-1248	1000	u
11097-69-1	AROCLOR-1254	1000	u
11096-82-5	AROCLOR-1260		

Volume of water extracted (ml):	1
Weight of sample extracted (g):	N.A.
Volume of total extract (ml):	10.00
Volume of extract injected (ul):	1.00

* Calculated from 1:10 dilution data
** CONFIRMED BY GC DUAL COLUMN CONFIRMATION

Laboratory Name S-CUBED

Case No 8521

Sample Number EP729

DIB031 (BNA)
23NY1101 (VOA)

Organics Analysis Data Sheet (Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT of Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NA	UNKNOWN HYDROCARBON	BNA	103	7.1×10^5 J
2.		UNKNOWN Cattiz		257	3.7×10^5 J
3.		~~UNKNOWN HYDROCARBON~~		285	2.0×10^6 J
4.		~~UNKNOWN HYDROCARBON~~ (2nd)		378	7.4×10^5 J
5.		UNKNOWN HYDROCARBON		419	1.3×10^6 J
6.		UNKNOWN HYDROCARBON		531	1.5×10^6 J
7.		UNKNOWN HYDROCARBON		632	1.6×10^6 J
8.		~~UNKNOWN HYDROCARBON~~ (2nd)		727	1.4×10^6 J
9.		UNKNOWN HYDROCARBON		780	7.2×10^5 J
10.		UNKNOWN HYDROCARBON		815	1.3×10^6 J
11.		UNKNOWN HYDROCARBON		897	6.5×10^5 J
12.		UNKNOWN HYDROCARBON		976	6.5×10^5 J
13.		UNKNOWN HYDROCARBON		979	5.7×10^5 J
14.		UNKNOWN HYDROCARBON		1118	6.6×10^5 J
15.		UNKNOWN HYDROCARBON		1185	6.5×10^5 J
16.		UNKNOWN HYDROCARBON		1249	1.6×10^6 J
17.		UNKNOWN HYDROCARBON		1369	1.4×10^6 J
18		UNKNOWN HYDROCARBON		1426	1.1×10^6 J
19.		UNKNOWN HYDROCARBON		1481	7.9×10^5 J
20		UNKNOWN	BNA	1534	6.0×10^5 J
21.		UNKNOWN	VOA	48	280 J B
22		UNKNOWN		145	160 J
23		UNKNOWN		219	160 J
24		Thiophene		246	160 J
25	110-02-1	Thiophene, 2-methyl		266	250 J
26	554-14-3	UNKNOWN	VOA	576	180 J
27.	NA			705	110 J
28					
29.					
30					

88JG01551

Sample Number:
EP732

8521

ORGANICS ANALYSIS DATA SHEET
(Page 1)

Laboratory Name: S-CUBED
Lab Sample ID No: 23NV1111 (VOA), D1B041 (ABN)
Sample Matrix: WATER
Data Release Authorized By: ----

Case No:
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 11-20-87

VOLATILE COMPOUNDS

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 11-23-87
Date Analyzed: 11-23-87
Conc/Dil Factor: 20 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		(ug/l) or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	200 U
74-83-9	BROMOMETHANE	200 U
75-01-4	VINYL CHLORIDE	200 U
75-00-3	CHLOROETHANE	200 U
75-09-2	METHYLENE CHLORIDE	130 B
67-64-1	ACETONE	1000 B
75-15-0	CARBON DISULFIDE	100 U
75-35-4	1,1-DICHLOROETHENE	100 U
75-34-3	1,1-DICHLOROETHANE	100 U
156-60-5	TRANS-1,2-DICHLOROETHENE	100 U
67-66-3	CHLOROFORM	100 U
107-06-2	1,2-DICHLOROETHANE	100 U
78-93-3	2-BUTANONE	350
71-55-6	1,1,1-TRICHLOROETHANE	100 U
56-23-5	CARBON TETRACHLORIDE	100 U
108-05-4	VINYL ACETATE	200 U
75-27-4	BROMODICHLOROMETHANE	100 U

CAS Number		(ug/l) or ug/kg (Circle One)
78-87-5	1,2-DICHLOROPROPANE	100 U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	100 U
79-01-6	TRICHLOROETHENE	100 U
124-48-1	DIBROMOCHLOROMETHANE	100 U
79-00-5	1,1,2-TRICHLOROETHANE	100 U
71-43-2	BENZENE	700
10061-01-5	CIS-1,3-DICHLOROPROPENE	100 U
110-75-8	2-CHLOROETHYLVINYLETHER	200 U
75-25-2	BROMOFORM	100 U
591-78-6	2-HEXANONE	200 U
108-10-1	4-METHYL-2-PENTANONE	200 U
127-18-4	TETRACHLOROETHENE	100 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	100 U
108-88-3	TOLUENE	1000
108-90-7	CHLOROBENZENE	34 J
100-41-4	ETHYLBENZENE	130
100-42-5	STYRENE	100 U
	TOTAL XYLENES	780

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Singl component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Sample Number :
EP732 :

Laboratory Name: S-CUBED
Case No: B521

ORGANIC ANALYSIS DATA SHEET
(Page 2)

SEMIVOLATILE COMPOUNDS

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 11-23-87
Date Analyzed: 12-01-87
Conc/Dil Factor: 10
Percent Moisture (Decanted): N.R

GPC Clean up ___Yes X___No
Separatory Funnel Extraction ___Yes
Continuous Liquid - Liquid Extraction_____X_____Yes

CAS Number		(ug/l or ug/kg (circle one))
108-95-2	PHENOL	590
111-44-4	BIS(2-CHLOROETHYL)ETHER	100 U
95-57-8	2-CHLOROPHENOL	100 U
541-73-1	1-3,DICHLOROBENZENE	100 U
106-46-7	1,4-DICHLOROBENZENE	100 U
100-51-6	BENZYL ALCOHOL	100 U
95-50-1	1,2-DICHLOROBENZENE	270
95-48-7	2-METHYLPHENOL	100 U
39638-32-9	BIS(2-CHLORO1SOPROPYL)ETHER	440
106-44-5	4-METHYLPHENOL	100 U
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	100 U
67-72-1	HEXACHLOROETHANE	100 U
98-95-3	NITROBENZENE	100 U
78-59-1	ISOPHORONE	100 U
88-75-5	2-NITROPHENOL	100 U
105-67-9	2,4-DIMETHYLPHENOL	500 U
65-85-0	BENZOIC ACID	100 U
111-91-1	BIS(2-CHLOROETHOXY)METHANE	100 U
120-83-2	2,4-DICHLOROPHENOL	100 U
120-82-1	1,2,4-TRICHLOROBENZENE	290
91-20-3	NAPHTHALENE	100 U
106-47-8	4-CHLOROANILINE	100 U
87-68-3	HEXACHLOROBUTADIENE	100 U
59-50-7	4-CHLORO-3-METHYLPHENOL	930
91-57-6	2-METHYLNAPHTHALENE	100 U
77-47-4	HEXACHLOROCYCLOPENTADIENE	100 U
88-06-2	2,4,6-TRICHLOROPHENOL	500 U
95-95-4	2,4,5-TRICHLOROPHENOL	100 U
91-58-7	2-CHLORONAPHTHALENE	500 U
88-74-4	2-NITROANILINE	100 U
131-11-3	DIMETHYL PHTHALATE	100 U
208-96-8	ACENAPHTHYLENE	500 U
99-09-2	3-NITROANILINE	500 U

CAS Number		(ug/l or ug/kg (circle one))
83-32-9	ACENAPHTHENE	100 U
51-28-5	2,4-DINITROPHENOL	500 U
100-02-7	4-NITROPHENOL	500 U
132-64-9	DIBENZOFURAN	100 U
121-14-2	2,4-DINITROTOLUENE	100 U
606-20-2	2,6-DINITROTOLUENE	100 U
84-66-2	DIETHYLPHTHALATE	100 U
7005-72-3	4-CHLOROPHENYL-PHENYLETHER	100 U
86-73-7	FLUORENE	100 U
100-01-6	4-NITROANILINE	500 U
534-52-1	4,6-DINITRO-2-METHYLPHENOL	500 U
86-30-6	N-NITROSODIPHENYLAMINE (1)	100 U
101-55-3	4-BROMOPHENYL-PHENYLETHER	100 U
118-74-1	HEXACHLOROBENZENE	100 U
87-86-5	PENTACHLOROPHENOL	500 U
85-01-8	PHENANTHRENE	270
120-12-7	ANTHRACENE	22 J
84-74-2	DI-N-BUTYLPHTHALATE	100 U
206-44-0	FLUORANTHENE	100 U
129-00-0	PYRENE	29 J
85-68-7	BUTYLBENZYLPHTHALATE	100 U
91-94-1	3,3'-DICHLOROBENZIDINE	200 U
56-55-3	BENZO(a)ANTHRACENE	100 U
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	100 U
218-01-9	CHRYSENE	22 J
117-84-0	DI-N-OCTYL PHTHALATE	100 U
205-99-2	BENZO(b)FLUORANTHENE	100 U
207-08-9	BENZO(k)FLUORANTHENE	100 U
50-32-8	BENZO(a)PYRENE	100 U
193-39-5	INDENO(1,2,3-CD)PYRENE	100 U
53-70-3	DIBENZ(a,h)ANTHRACENE	100 U
191-24-2	BENZO(g,h,i)PERYLENE	100 U

(1)-Cannot be seperated from diphenylamine.

Laboratory Name: G-Cubed
Case No.: 8521

Sample Number
EP 732

ORGANICS ANALYSIS DATA
(Page 3)

Pesticide/PCBs

Concentration: LOW
Date Extracted/Prepared: 11-23-87
Date Analyzed: 12-13-87
Conc/Dil Factor: 1.00

GPC Cleanup ___Yes X NO
Separatory Funnel Extraction ___Yes
Continuous Liquid-Liquid Extraction X Yes

(ug/l) or ug/Kg
(Circle One)

CAS # Number		
319-84-6	ALPHA-BHC	0.050 u
319-85-7	BETA-BHC	0.050 u
319-86-8	DELTA-BHC	0.050 u
58-89-9	GAMMA-BHC (LINDANE)	0.100 **
76-44-8	HEPTACHLOR	0.050 u
309-00-2	ALDRIN	0.050 u
1024-57-3	HEPTACHLOR EPOXIDE	0.280 *, **
959-98-8	ENDOSULFAN I	0.300 *, **
60-57-1	DIELDRIN	0.10 u
72-55-9	4,4'-DDE	0.10 u
72-20-8	ENDRIN	0.10 u
33213-65-9	ENDOSULFAN II	0.10 u
72-54-8	4,4'-DDD	0.29 **
7421-93-4	ENDRIN ALDEHYDE	0.10 u
1031-07-8	ENDOSULFAN SULFATE	0.10 u
50-29-3	4,4'-DDT	0.10 u
72-43-5	METHOXYCHLOR	0.50 u
53494-70-5	ENDRIN KETONE	0.10 u
57-74-9	CHLORDANE	0.50 u
8001-35-2	TOXAPHENE	1.0 u
12674-11-2	AROCLOR-1016	0.50 u
11104-28-2	AROCLOR-1221	0.50 u
11141-16-5	AROCLOR-1232	0.50 u
53469-21-9	AROCLOR-1242	0.50 u
12672-29-6	AROCLOR-1248	1.0 u
11097-69-1	AROCLOR-1254	1.0 u
11096-82-5	AROCLOR-1260	1.0 u

Volume of water extracted (ml):	1000
Weight of sample extracted (g):	N.A.
Volume of total extract (ml):	10.00
Volume of extract injected (ul):	1.00

Form I 7/85 REV.

* Calculated from 1:10 dilution data
** CONFIRMED BY GC DUAL COLUMN CONFIRMATION

Laboratory Name S-CUBED

Case No 8521

Sample Number: EP732
DI3041 (BNA)
Z3NV1111 (VOA)

Organics Analysis Data Sheet (Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NA	UNKNOWN HYDROCARBON	BNA	282	JW 660 J 1300 J
2.		UNKNOWN HYDROCARBON		415	590 J JW 1200 J
3.		UNKNOWN HYDROCARBON		527	690 J JW 1400 J
4.		UNKNOWN HYDROCARBON		628	810 J JW 1600 J
5.		UNKNOWN dimethyl naphthalene		711	260 J JW 520 J
6.		UNKNOWN HYDROCARBON		722	680 J JW 1400 J
7.		UNKNOWN HYDROCARBON		811	860 J JW 1800 J
8.		UNKNOWN		848	340 J JW 680 J
9.		UNKNOWN HYDROCARBON		893	920 J JW 1800 J
10.		UNKNOWN HYDROCARBON		931	450 J JW 900 J
11.		UNKNOWN HYDROCARBON		972	920 J JW 1800 J
12.		UNKNOWN HYDROCARBON		975	590 J JW 1200 J
13.		UNKNOWN HYDROCARBON		1045	800 J JW 1600 J
14.		UNKNOWN HYDROCARBON		1051	450 J JW 900 J
15.		UNKNOWN HYDROCARBON		1116	820 J JW 1600 J
16.		UNKNOWN HYDROCARBON		1183	710 J JW 1400 J
17.		UNKNOWN HYDROCARBON		1247	640 J JW 1300 J
18.		UNKNOWN HYDROCARBON		1309	500 J JW 1200 J
19.		UNKNOWN HYDROCARBON		1368	420 J JW 900 J
20.		UNKNOWN HYDROCARBON	BNA	1425	310 J JW 600 J
21.		UNKNOWN	VOA	28	200 J
22.		UNKNOWN		98	340 J B
23.	110-02-1	Thiophene		266	180 J
24.	554-14-3	thiophene, 2-methyl	VOA	376	130 J
25.					
26.					
27.					
28.					
29.					
30.					

88JG01552

Sample Number:
EP730

8521

ORGANICS ANALYSIS DATA SHEET
(Page 1)

Laboratory Name: S-CUBED
Lab Sample ID No: 23NV1041 (MW), D8B051 (ABA)
Sample Matrix: WATER
Data Release Authorized By: ---N---

Case No:
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 11-20-87

VOLATILE COMPOUNDS
Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 11-23-87
Date Analyzed: 11-23-87
Conc/Dil Factor: 50 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		(ug/l) or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	500 U
74-83-9	BROMOMETHANE	500 U
75-01-4	VINYL CHLORIDE	500 U
75-00-3	CHLOROETHANE	500 U
75-09-2	METHYLENE CHLORIDE	250 B
67-64-1	ACETONE	1300 B
75-15-0	CARBON DISULFIDE	250 U
75-35-4	1,1-DICHLOROETHENE	250 U
75-34-3	1,1-DICHLOROETHANE	250 U
156-60-5	TRANS-1,2-DICHLOROETHENE	250 U
67-66-3	CHLOROFORM	250 U
107-06-2	1,2-DICHLOROETHANE	250 U
78-93-3	2-BUTANONE	500 U
71-55-6	1,1,1-TRICHLOROETHANE	250 U
56-23-5	CARBON TETRACHLORIDE	250 U
108-05-4	VINYL ACETATE	500 U
75-27-4	BROMODICHLOROMETHANE	250 U

CAS Number		(ug/l) or ug/kg (Circle One)
78-87-5	1,2-DICHLOROPROPANE	250 U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	250 U
79-01-6	TRICHLOROETHENE	250 U
124-48-1	DIBROMOCHLOROMETHANE	250 U
79-00-5	1,1,2-TRICHLOROETHANE	250 U
71-43-2	BENZENE	1400
10061-01-5	CIS-1,3-DICHLOROPROPENE	250 U
110-75-8	2-CHLOROETHYLVINYLETHER	500 U
75-25-2	BROMOFORM	250 U
591-78-6	2-HEXANONE	500 U
108-10-1	4-METHYL-2-PENTANONE	500 U
127-18-4	TETRACHLOROETHENE	250 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	250 U
108-88-3	TOLUENE	2200
108-90-7	CHLOROBENZENE	250 U
100-41-4	ETHYLBENZENE	280
100-42-5	STYRENE	250 U
	TOTAL XYLENES	1300

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Sample Number :
EP730 :

Laboratory Name: S-CUBED
Case No: 8521

ORGANIC ANALYSIS DATA SHEET
(Page 2)

SEMIVOLATILE COMPOUNDS

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 11-23-87
Date Analyzed: 12-08-87
Conc/Dil Factor: 20
Percent Moisture (Decanted): N.R

GPC Clean up ___Yes X No
Separatory Funnel Extraction ___Yes
Continuous Liquid - Liquid Extraction_____X_____Yes

CAS Number		(ug/l or ug/kg circle one)
108-95-2	PHENOL	7200
111-44-4	BIS(2-CHLOROETHYL)ETHER	200 U
95-57-8	2-CHLOROPHENOL	200 U
541-73-1	1-3,DICHLOROBENZENE	200 U
106-46-7	1,4-DICHLOROBENZENE	200 U
100-51-6	BENZYL ALCOHOL	200 U
95-50-1	1,2-DICHLOROBENZENE	200 U
95-48-7	2-METHYLPHENOL	3200
39638-32-9	BIS(2-CHLOROISOPROPYL)ETHER	200 U
106-44-5	4-METHYLPHENOL	5800
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	200 U
67-72-1	HEXACHLOROETHANE	200 U
98-95-3	NITROBENZENE	200 U
78-59-1	ISOPHORONE	200 U
88-75-5	2-NITROPHENOL	200 U
105-67-9	2,4-DIMETHYLPHENOL	4100
65-85-0	BENZOIC ACID	1000 U
111-91-1	BIS(2-CHLOROETHOXY)METHANE	200 U
120-83-2	2,4-DICHLOROPHENOL	200 U
120-82-1	1,2,4-TRICHLOROBENZENE	200 U
91-20-3	NAPHTHALENE	930
106-47-8	4-CHLOROANILINE	200 U
87-68-3	HEXACHLOROBUTADIENE	200 U
59-50-7	4-CHLORO-3-METHYLPHENOL	200 U
91-57-6	2-METHYLNAPHTHALENE	2200
77-47-4	HEXACHLOROCYCLOPENTADIENE	200 U
88-06-2	2,4,6-TRICHLOROPHENOL	200 U
95-95-4	2,4,5-TRICHLOROPHENOL	1000 U
91-58-7	2-CHLORONAPHTHALENE	200 U
88-74-4	2-NITROANILINE	1000 U
131-11-3	DIMETHYL PHTHALATE	200 U
208-96-8	ACENAPHTHYLENE	200 U
99-09-2	3-NITROANILINE	1000 U

CAS Number		(ug/l or ug/kg circle one)
83-32-9	ACENAPHTHENE	200 U
51-28-5	2,4-DINITROPHENOL	1000 U
100-02-7	4-NITROPHENOL	1000 U
132-64-9	DIBENZOFURAN	200 U
121-14-2	2,4-DINITROTOLUENE	200 U
606-20-2	2,6-DINITROTOLUENE	200 U
84-66-2	DIETHYLPHTHALATE	200 U
7005-72-3	4-CHLOROPHENYL-PHENYLETHER	200 U
86-73-7	FLUORENE	200 U
100-01-6	4-NITROANILINE	1000 U
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1000 U
86-30-6	N-NITROSODIPHENYLAMINE (1)	200 U
101-55-3	4-BROMOPHENYL-PHENYLETHER	200 U
118-74-1	HEXACHLOROBENZENE	200 U
87-86-5	PENTACHLOROPHENOL	1000 U
85-01-8	PHENANTHRENE	440
120-12-7	ANTHRACENE	41 J
84-74-2	DI-N-BUTYLPHTHALATE	200 U
206-44-0	FLUORANTHENE	200 U
129-00-0	PYRENE	200 U
85-68-7	BUTYLBENZYLPHTHALATE	200 U
91-94-1	3,3'-DICHLOROBENZIDINE	400 U
56-55-3	BENZO(a)ANTHRACENE	200 U
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	200 U
218-01-9	CHRYSENE	200 U
117-84-0	DI-N-OCTYL PHTHALATE	200 U
205-99-2	BENZO(b)FLUORANTHENE	200 U
207-08-9	BENZO(k)FLUORANTHENE	200 U
50-32-8	BENZO(a)PYRENE	200 U
193-39-5	INDENO(1,2,3-CD)PYRENE	200 U
53-70-3	DIBENZ(a,h)ANTHRACENE	200 U
191-24-2	BENZO(g,h,i)PERYLENE	200 U

(1)-Cannot be seperated from diphenylamine.

Laboratory Name: S-Cubed
Case No.: 8521

Sample Number
EP 730

ORGANICS ANALYSIS DATA
(Page 3)

Pesticide/PCBs

GPC Cleanup ___Yes X NO
Separatory Funnel Extraction ___Yes
Continuous Liquid-Liquid Extraction X Yes

Concentration:	LOW
Date Extracted/Prepared:	11-23-87
Date Analyzed:	12-12-87
Conc/Dil Factor:	1.00

(ug/L) or ug/Kg
(Circle One)

CAS # Number		
319-84-6	ALPHA-BHC	0.660 *,**
319-85-7	BETA-BHC	0.050 u
319-86-8	DELTA-BHC	0.300 *,**
58-89-9	GAMMA-BHC (LINDANE)	0.050 u
76-44-8	HEPTACHLOR	0.050 u
309-00-2	ALDRIN	0.050 u
1024-57-3	HEPTACHLOR EPOXIDE	0.270 *,**
959-98-8	ENDOSULFAN I	0.050 u
60-57-1	DIELDRIN	0.10 u
72-55-9	4,4'-DDE	0.10 u
72-20-8	ENDRIN	0.18 **
33213-65-9	ENDOSULFAN II	0.10 u
72-54-8	4,4'-DDD	0.10 u
7421-93-4	ENDRIN ALDEHYDE	0.10 u
1031-07-8	ENDOSULFAN SULFATE	0.10 u
50-29-3	4,4'-DDT	0.10 u
72-43-5	METHOXYCHLOR	0.50 u
53494-70-5	ENDRIN KETONE	0.10 u
57-74-9	CHLORDANE	0.50 u
8001-35-2	TOXAPHENE	1.0 u
12674-11-2	AROCLOR-1016	0.50 u
11104-28-2	AROCLOR-1221	0.50 u
11141-16-5	AROCLOR-1232	0.50 u
53469-21-9	AROCLOR-1242	0.50 u
12672-29-6	AROCLOR-1248	1.0 u
11097-69-1	AROCLOR-1254	1.0 u
11096-82-5	AROCLOR-1260	1.0 u

Volume of water extracted (ml):	1000
Weight of sample extracted (g):	N.A.
Volume of total extract (ml):	10.00
Volume of extract injected (ul):	1.00

* Calculated from 1:10 dilution data.
** CONFIRMED BY GC DUAL COLUMN CONFIRMATION

Laboratory Name S-CUBED

Case No 8521

Sample Number EP730

D8B031 (BNA)
23NV1041 (VOA)

Organics Analysis Data Sheet (Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NA	UNKNOWN C_9H_{12}	BNA	249	11600 J
2.		UNKNOWN HYDROCARBON		277	9800 J
3.		UNKNOWN HYDROCARBON		412	3000 J
4.		UNKNOWN HYDROCARBON		524	3100 J
5.		UNKNOWN		617	1700 J
6.		UNKNOWN HYDROCARBON		625	3400 J
7.		UNKNOWN dimethyl naphthalene		707	1200 J
8.		UNKNOWN HYDROCARBON		719	3000 J
9.		UNKNOWN ~~HYDROCARBON~~ (2)		806	3600 J
10.		UNKNOWN HYDROCARBON		844	1200 J
11.		UNKNOWN HYDROCARBON		889	3800 J
12.		UNKNOWN HYDROCARBON		927	1500 J
13.		UNKNOWN HYDROCARBON		967	4200 J
14.		UNKNOWN HYDROCARBON		971	2000 J
15.		UNKNOWN HYDROCARBON		1041	2900 J
16.		UNKNOWN HYDROCARBON		1111	3000 J
17.		UNKNOWN HYDROCARBON		1179	2400 J
18		UNKNOWN HYDROCARBON		1243	2000 J
19.		UNKNOWN HYDROCARBON		1305	1600 J
20		UNKNOWN	BNA	1365	1200 J
21.		UNKNOWN	VOA	49	580 J B
22		UNKNOWN		220	290 J
23		Thiophene		247	290 J
24	110-02-1	Thiophene, 2-methyl		267	350 J
25	554-14-3		VOA	377	300 J
26					
27.					
28					
29.					
30					

88JG01546

: Sample Number: EP731 :

8521

ORGANICS ANALYSIS DATA SHEET
(Page 1)

Laboratory Name: S-CUBED
Lab Sample ID No: 23NV1031 (NV25091 (ABW))
Sample Matrix: WATER
Data Release Authorized By: ---

Case No:
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 11-20-87

VOLATILE COMPOUNDS

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 11-23-87
Date Analyzed: 11-23-87
Conc/Dil Factor: 1.0 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		(ug/l) or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	10 U
74-83-9	BROMOMETHANE	10 U
75-01-4	VINYL CHLORIDE	10 U
75-00-3	CHLOROETHANE	10 U
75-09-2	METHYLENE CHLORIDE	7 B
67-64-1	ACETONE	15 B
75-15-0	CARBON DISULFIDE	5 U
75-35-4	1,1-DICHLOROETHENE	5 U
75-34-3	1,1-DICHLOROETHANE	5 U
156-60-5	TRANS-1,2-DICHLOROETHENE	5 U
67-66-3	CHLOROFORM	5 U
107-06-2	1,2-DICHLOROETHANE	5 U
78-93-3	2-BUTANONE	10 U
71-55-6	1,1,1-TRICHLOROETHANE	5 U
56-23-5	CARBON TETRACHLORIDE	5 U
108-05-4	VINYL ACETATE	10 U
75-27-4	BROMODICHLOROMETHANE	5 U

CAS Number		(ug/l) or ug/kg (Circle One)
78-87-5	1,2-DICHLOROPROPANE	5 U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5 U
79-01-6	TRICHLOROETHENE	5 U
124-48-1	DIBROMOCHLOROMETHANE	5 U
79-00-5	1,1,2-TRICHLOROETHANE	5 U
71-43-2	BENZENE	5 U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5 U
110-75-8	2-CHLOROETHYLVINYLETHER	10 U
75-25-2	BROMOFORM	5 U
591-78-6	2-HEXANONE	10 U
108-10-1	4-METHYL-2-PENTANONE	10 U
127-18-4	TETRACHLOROETHENE	5 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5 U
108-88-3	TOLUENE	5 U
108-90-7	CHLOROBENZENE	5 U
100-41-4	ETHYLBENZENE	5 U
100-42-5	STYRENE	5 U
	TOTAL XYLENES	5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides) or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Sample Number :
EP731 :

Laboratory Name: S-CUBED
Case No: 8521

ORGANIC ANALYSIS DATA SHEET
(Page 2)

SEMIVOLATILE COMPOUNDS

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 11-23-87
Date Analyzed: 11-25-87
Conc/Dil Factor: 1.0
Percent Moisture (Decanted): N.R

GPC Clean up ___Yes X No
Separatory Funnel Extraction ___Yes
Continuous Liquid - Liquid Extraction_____X_____Yes

CAS Number		(ug/l) or ug/kg (Circle one)
108-95-2	PHENOL	10 U
111-44-4	BIS(2-CHLOROETHYL)ETHER	10 U
95-57-8	2-CHLOROPHENOL	10 U
541-73-1	1-3,DICHLOROBENZENE	10 U
106-46-7	1,4-DICHLOROBENZENE	10 U
100-51-6	BENZYL ALCOHOL	10 U
95-50-1	1,2-DICHLOROBENZENE	10 U
95-48-7	2-METHYLPHENOL	10 U
39638-32-9	BIS(2-CHLORDISOPROPYL)ETHER	10 U
106-44-5	4-METHYLPHENOL	10 U
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10 U
67-72-1	HEXACHLOROETHANE	10 U
98-95-3	NITROBENZENE	10 U
78-59-1	ISOPHORONE	10 U
88-75-5	2-NITROPHENOL	10 U
105-67-9	2,4-DIMETHYLPHENOL	50 U
65-85-0	BENZOIC ACID	10 U
111-91-1	BIS(2-CHLOROETHOXY)METHANE	10 U
120-83-2	2,4-DICHLOROPHENOL	10 U
120-82-1	1,2,4-TRICHLOROBENZENE	10 U
91-20-3	NAPHTHALENE	10 U
106-47-8	4-CHLOROANILINE	10 U
87-68-3	HEXACHLOROBUTADIENE	10 U
59-50-7	4-CHLORO-3-METHYLPHENOL	10 U
91-57-6	2-METHYLNAPHTHALENE	10 U
77-47-4	HEXACHLOROCYCLOPENTADIENE	10 U
88-06-2	2,4,6-TRICHLOROPHENOL	50 U
95-95-4	2,4,5-TRICHLOROPHENOL	10 U
91-58-7	2-CHLORONAPHTHALENE	50 U
88-74-4	2-NITROANILINE	10 U
131-11-3	DIMETHYL PHTHALATE	10 U
208-96-8	ACENAPHTHYLENE	50 U
99-09-2	3-NITROANILINE	

CAS Number		(ug/l) or ug/kg (circle one)
83-32-9	ACENAPHTHENE	10 U
51-28-5	2,4-DINITROPHENOL	50 U
100-02-7	4-NITROPHENOL	50 U
132-64-9	DIBENZOFURAN	10 U
121-14-2	2,4-DINITROTOLUENE	10 U
606-20-2	2,6-DINITROTOLUENE	10 U
84-66-2	DIETHYLPHTHALATE	10 U
7005-72-3	4-CHLOROPHENYL-PHENYLETHER	10 U
86-73-7	FLUORENE	10 U
100-01-6	4-NITROANILINE	50 U
534-52-1	4,6-DINITRO-2-METHYLPHENOL	50 U
86-30-6	N-NITROSODIPHENYLAMINE (1)	10 U
101-55-3	4-BROMOPHENYL-PHENYLETHER	10 U
118-74-1	HEXACHLOROBENZENE	10 U
87-86-5	PENTACHLOROPHENOL	50 U
85-01-8	PHENANTHRENE	10 U
120-12-7	ANTHRACENE	10 U
84-74-2	DI-N-BUTYLPHTHALATE	10 U
206-44-0	FLUORANTHENE	10 U
129-00-0	PYRENE	10 U
85-68-7	BUTYLBENZYLPHTHALATE	10 U
91-94-1	3,3'-DICHLOROBENZIDINE	20 U
56-55-3	BENZO(a)ANTHRACENE	10 U
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10 U
218-01-9	CHRYSENE	10 U
117-84-0	DI-N-OCTYL PHTHALATE	10 U
205-99-2	BENZO(b)FLUORANTHENE	10 U
207-08-9	BENZO(k)FLUORANTHENE	10 U
50-32-8	BENZO(a)PYRENE	10 U
193-39-5	INDENO(1,2,3-CD)PYRENE	10 U
53-70-3	DIBENZ(a,h)ANTHRACENE	10 U
191-24-2	BENZO(g,h,i)PERYLENE	10 U

(1)-Cannot be seperated from diphenylamine.

Laboratory Name: S-Cubed
Case No.: 8521

Sample Number
EP 731

ORGANICS ANALYSIS DATA
(Page 3)

Pesticide/PCBs

GPC Cleanup ___Yes X NO
Separatory Funnel Extraction ___Yes
Continuous Liquid-Liquid Extraction X Yes

Concentration: LOW
Date Extracted/Prepared: 11-23-87
Date Analyzed: 12-13-87
Conc/Dil Factor: 1.00

ug/l or ug/Kg
(Circle One)

CAS # Number		
319-84-6	ALPHA-BHC	0.050 u
319-85-7	BETA-BHC	0.050 u
319-86-8	DELTA-BHC	0.050 u
58-89-9	GAMMA-BHC (LINDANE)	0.050 u
76-44-8	HEPTACHLOR	0.050 u
309-00-2	ALDRIN	0.050 u
1024-57-3	HEPTACHLOR EPOXIDE	0.050 u
959-98-8	ENDOSULFAN I	0.10 u
60-57-1	DIELDRIN	0.10 u
72-55-9	4,4'-DDE	0.10 u
72-20-8	ENDRIN	0.10 u
33213-65-9	ENDOSULFAN II	0.10 u
72-54-8	4,4'-DDD	0.10 u
7421-93-4	ENDRIN ALDEHYDE	0.10 u
1031-07-8	ENDOSULFAN SULFATE	0.10 u
50-29-3	4,4'-DDT	0.50 u
72-43-5	METHOXYCHLOR	0.10 u
53494-70-5	ENDRIN KETONE	0.50 u
57-74-9	CHLORDANE	1.0 u
8001-35-2	TOXAPHENE	0.50 u
12674-11-2	AROCLOR-1016	0.50 u
11104-28-2	AROCLOR-1221	0.50 u
11141-16-5	AROCLOR-1232	0.50 u
53469-21-9	AROCLOR-1242	0.50 u
12672-29-6	AROCLOR-1248	1.0 u
11097-69-1	AROCLOR-1254	1.0 u
11096-82-5	AROCLOR-1260	1.0 u

Volume of water extracted (ml):	1000
Weight of sample extracted (g):	N.A.
Volume of total extract (ml):	10.00
Volume of extract injected (ul):	1.00

** CONFIRMED BY GC DUAL COLUMN CONFIRMATION

Laboratory Name S-CUBED

Case No 8521

Sample Number
EP731
NV25091 (BNA)
Z3NV1031(VOA)

Organics Analysis Data Sheet (Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NA	UNKNOWN	BNA	1219	37J
2.	↓	UNKNOWN	VOA	51	11J B
3.		UNKNOWN	VOA	119	21J
4.					
5.					
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CLARK OIL & REFINING CORPORATION

November 13, 1987

Lily Herskovits
U.S. Environmental Protection Agency
Region V
230 S. Dearborn Street
Chicago, Illinois 60604

Re: Wood River Refinery

Dear Ms. Herskovits:

This letter confirms your telephone call of yesterday concerning a sampling program to be undertaken at the above facility.

Scope

Sampling will be conducted on November 17, 18 and 19, 1987 by Lily Herskovits of USEPA and one or two other persons employed by Metcalf & Eddy. Sampling will begin at 9:00 A.M.

Sampling Locations

a) API separator influent
b) Return flow to API separator from settling pit
c) Sludge in settling pit
d) Point in HF alkylation unit where spent acid is neutralized
e) Soil in vicinity of tank 10-6
f) Soil in vicinity of tank R-13 (or R-16)

Sampling and Analysis

Three grab samples taken during each sampling day at locations a, b, c and d will be composited resulting in a daily composite for each sampling location for each of the sampling days. Single daily grab samples will be taken at locations e and f. All samples will be analyzed for heavy metals and organics (to be specified on November 17). Liquid samples will be analyzed for TSS and FOG. Clark will be provided with split samples and Clark will be provided with the results of USEPA analysis.

Additional Information

USEPA will confirm previously provided information concerning flows to and from the API separator. Clark will provide information concerning spent acid handling at the HF Alkylation Unit.

Please be aware that your sampling will take place during a major refinery turnaround. It is likely that no samples will be available at location d and that samples at locations a, b and c will not represent typical operations.

Clark will be pleased to continue its cooperation with your office.

Sincerely,

John T. Bernbom

dlg

copy to: Ed Soyk
Al Ludwig
G. Knipping
R. Nelson

OCT 2 0 1987

5HS-13

Mr. John Bernbom, Director
Environmental Control
Clark Oil & Refining Corporation
Post Office Box 297
Blue Island, IL 60400

Re: Sampling Inspections
ILD 005 109 822
ILD 041 889 023

Dear Mr. Bernbom:

This is to inform you that the United States Environmental Protection Agency (U.S. EPA) will collect samples at both of your refineries, Wood River and Blue Island, in the middle of November, or at a later specified date. We will notify you ten days in advance of the actual date of sampling. The objective of this sampling inspection is to determine whether or not Clark refineries treat and/or store hazardous waste.

Section 3007(a)(2) of the Resource Conservation and Recovery Act authorizes U.S. EPA or its representative to collect samples at any site that generates, stores, treats, transports, disposes of, or otherwise handles or handled hazardous waste. We will carry out the sampling under this authority. A detailed sampling plan will be provided to you at the time of sampling.

Should you need further information on the above subject, please contact Lily Herskovits of my staff, at (312) 886-1477.

Sincerely,

ORIGINAL SIGNED BY/
JAMES N. MAYKA

Karl E. Bremer, Chief
Technical Program Section

cc: Larry Eastep/ IEPA
Mike Grant/ IEPA

TYP	AU	E	IN	ME	MN/WI	OS		
		CHIEF	CHIEF	CHIEF	CHIEF			
LH 10/19/87	LH 10/19/87							

SAMPLING PLAN

Clark Oil and Refining
P.O.Box 7
Hartford, IL 62048
ILD 041 889 023

GENERAL INFORMATION

Clark Oil and Refining Company is located in Wood River , Illinois.
It is a typical Oil Refinery with the conventional process units.
Its RCRA status: generator only.
According to information provided by the facility all the listed refinery waste streams are recycled to the coker unit, except the DAF sludge, which is sent out to a RCRA approved hazardous waste landfill.
There are two storage tank at the site that are used for leaded gasoline storage (35-1 and 35-2) no sludge was ever found in these tanks therefore Clark claims that no K052 is generated in Wood River.

SAMPLING OBJECTIVE

To sample the API separator influent and return flow to clarify if the return flow meets the equivalency test; is it better or equivalent to influent flow quality.
To analyze the sludge in the "PIT" for lead and chromium to establish the hazardousness of the sludge.

SAMPLING LOCATIONS

The following samples to be taken at Clark Oil:
1. API separator influent
2. API separator Return flow from the "PIT"
3. Sludge in PIT and API separator
4. Soil in the containment areas of tanks 10-6, R-13, R-16
5. Influent and effluent of the spent caustic tank (HF Alkyl Unit)

ANALYTICAL PARAMETERS

All water samples shall be tested for:	Method
VOA, Semi-volatiles	CLP protocol 780
pH,	SW 846/9040
Oil & Grease	St.Methods for Examination of Water/Wastewater
Total/Reactive Sulfides	SW 846/8310 and 9010
EP-TOX metals	SW 846/6010 and 7191/7421
TSS	SMFEWW 209.D /ASTM D4007

The Sludge samples shall be tested for:
EP-TOX metals
VOA
Total solid content

Soil samples shall be analyzed for RAS organics and inorganics.

SAMPLING PROCEDURES

Take samples three times a day, and composite the three samples into one daily sample. Make this for three days, that will result in three composite samples for both water and sludges. The EP-TOX samples shall be forwarded to EPA Region V. Central Regional Laboratory (CRL). The rest of the samples go through SMO. Most of the analytical work is a Special Analytical Request and SMO will assign the respective laboratory for the tests requested.

SPECIAL INSTRUCTIONS

Bottle requirements are defined by the test methods used; therefore the necessary type and number of bottles shall be selected accordingly.
The team leader, responsible for sampling inspection, shall contact the regional SMO (Jan Pels) at (312) 353-2720 for case numbers and laboratory assignments.
The samples going to Region V., CRL shall be shipped out daily, the rest of the samples should be shipped out according to SMO instructions.

Statement of Work

Clark Oil,
Wood River Refinery
P.O.Box 7
Hartford, IL 62048
ILD 041 889 023

SCOPE OF WORK

The United States Environmental Protection Agency (U.S. EPA) is reviewing Clark Oil Refining Company compliance status with RCRA regulations. The objective of this sampling inspection is to clarify, does or does not Clark Oil stores/or treat hazardous waste that is subject to RCRA permitting requirements.

BACKGROUND INFORMATION

Clark Oil generates API separator sludge - K051, DAF float - K049, and leaded tank bottoms - K052. In the refinery all the above wastes end up in the API separator and in their Wastewater Treatment System. The sludge generated in API separator is a listed hazardous waste, and any supernatant derived from their sludge thickening operation is also a hazardous waste due to "derived from" and "mixture" rules. A "pit"receives the API separator sludge, from where the supernatant is recycled to API separator, and the sludge is pumped to coker together with the oily skimmings of API separator and pit.
Clark Oil has an alkylation unit where a waste stream is generated - spent acid, that has a low pH value. It likely meets the characteristics of corrosivity. Clark Oil claims that this acid is neutralized in the chemical process itself and therefore they do not generate or treat hazardous waste in the Alkyl unit. The facility has a spent caustic tank, and several slop oil tanks that Clark claims as a continuous operating tanks, not used for storage for more than 90 days, therefore not subject to RCRA permitting requirements.

The samples taken during the sampling inspection shall provide the necessary information to determine: is the return water to the API separator and the spent acid in HF Alkylation unit are hazardous wastes that require a RCRA permit. We seek an answer also on the status of slop oil tanks and the spills around two of these tanks, that cover a big part of the containment areas.

WORK TO BE PERFORMED

1. Contractor shall take samples as specified in the attached sampling plan.
2. Contractor shall package and forward the samples to the laboratory assigned by the Region V. CLP program management according to their chain of custody procedures.

3. Contractor shall prepare a written Sampling Report. This report should consist of:
   - A complete description of the sampling trip, sampling procedures used, location of samples taken, special preparation (if any), unusual problems encountered and chain of custody procedures.

COMPLETION DATE

This project will be completed according to the schedule negotiated between the contractor and EPA Region V. technical representative.

DUE DATES FOR DELIVERABLES

The report, consisting of the sampling information should be submitted to EPA within 15 work days of the sapling inspection.

TRAVEL REQUIREMENTS

Contractor shall travel to Wood River, Illinois to complete this assignement. The estimated travel expenses for the sampling team shall be itemized and included in the work plan.

COST ESTIMATE

Item	Person/Hour	Cost(@ $50.00/hr)
Work plan development	8	400
Sampling plan review	8	400
Travel (2persons/3 days)	20	1000
Report writing	16	800
Administrative expenses	9	450
Other direct cost	30	1500
TOTAL	91	4550

ENVIRONMENTAL PROTECTION AGENCY
TECHNICAL ENFORCEMENT SUPPORT
AT HAZARDOUS WASTE SITES

TES IV
CONTRACT NO. 68-01-7351
WORK ASSIGNMENT NO. 201

RCRA FACILITY ASSESSMENT SAMPLING REPORT

CLARK OIL
WOOD RIVER REFINERY
HARTFORD, ILLINOIS

EPA REGION V

JACOBS ENGINEERING GROUP, INC.
PROJECT NO. 05-B201-00

REPORT PREPARED BY:

METCALF & EDDY, INC.
85 WEST ALGONQUIN ROAD, SUITE 500
ARLINGTON HEIGHTS, ILLINOIS 60005

JANUARY 1988

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SECTION 1
INTRODUCTION

1.1 Scope of Work

Metcalf & Eddy, Incorporated (M&E) was issued a work assignment (WA #201) under the Technical Enforcement Support (TES) IV Contract (EPA #68017351) to perform RCRA Facility Assessment (RFA) sampling at Clark Oil, Wood River Refinery, Hartford, Illinois. Due to the nature of the material handled onsite, this work assignment was issued to identify whether Clark Oil does or does not store or treat hazardous waste that is subject to RCRA permitting requirements.

1.2 Site Background

Clark Oil and Refining Company is located in Wood River, Illinois. It is a typical Oil Refinery with the conventional process units. The facility is a generator of hazardous wastes only. According to information provided by the facility all the listed refinery waste streams are recycled to the coker unit, except the DAF sludge, which is sent out to a RCRA approved hazardous waste landilll. There are two storage tanks at the site that are used for leaded gasoline storage, tanks 35-1 and 35-2. The solids formed in these tanks are shipped off-site as KO52 wastes.

Clark Oil generates API separator sludge - K051, DAF float - K049, and leaded tank bottoms - K052. In the refinery all the above wastes end up in the API separator and in their Wastewater Treatment System. The sludge generated in the API separator is a listed hazardous waste, and any supernatant derived from their sludge thickening operation is also a hazardous waste due to "derived from" and "mixture" rules. A "pit" receives the API separator sludge, from where the supernatant is recycled to the API separator, and the sludge is pumped to a coker together with the oily skimmings of the API separator and pit. Clark Oil has an alkylation unit where a spent acid with a low pH value is generated. It likely meets the characteristics of corrosivity. Clark Oil claims that this acid is neutralized in the chemical process itself and therefore they do not generate or treat hazardous waste in the Alkyl unit. The facility has a spent caustic tank, and several slop oil tanks that Clark claims as a continuous operating tanks, not used for storage for more than 90 days, therefore not subject to RCRA permitting requirements.

1.3 Project Approach

The RFA work assignment consisted of three tasks. Each of these tasks are briefly described below:

TASK 1: Field Sampling

Surface water, sludge, and soil/sediment samples were collected at onsite locations to help characterize potential contamination at the facility. As samples were collected, they were preserved according to U.S. EPA procedures which are described in the February 10, 1987 Quality Assurance Project Plan for the RFA project. All sampling locations were identified by the U.S. EPA primary contact, Dr. Lily Herskovits.

TASK 2: Sample Shipment

All samples collected were sent to designated Contract Laboratory Program (CLP) laboratories. Samples collected for organics analysis were sent to S-Cubed in San Diego, California. Samples collected for inorganics analysis were sent to Northern Labs in Valparaiso, Indiana. Samples collected for EP toxicity analysis were sent to the Region V CRL Lab in Chicago, Illinois. Samples collected for TSS, sulfides, and oil and grease analysis were sent to Centex in Salem, Virginia. Standard U.S. EPA sample handling protocols were followed for sample preservation, packaging and shipment.

TASK 3: Sample Report

This written report is being submitted to the U.S. EPA upon completion of the sampling activities.

SECTION 2
FIELD ACTIVITIES

2.1 INTRODUCTION

On November 17, 18 and 19, M&E representatives Judy Wingo, Bob Schoepke and Gary Schafer collected a total of 8 onsite soil/sediment samples, and six onsite surface water samples at the Clark Oil, Wood River Refinery, Hartford, Illinois. (See Table/and Figure 1). Access to the facility and to all sampling locations was obtained by the EPA Primary Contact, Dr. Lily Herskovitz.

Prior to the date of sampling, Mr. Gene Knipping, Environmental Engineer of Clark Oil Wood River Refinery, requested split samples from all proposed sampling locations. This request was agreed to by Lily Herskovitz of the U.S. EPA and Judy Wingo, M&E.

Prior to the start of sampling on November 17, 1987, Mr. Gene Knipping and Mr. Joe Bean of Clark Oil, Mike Grant of the Illinois EPA, Dr. Lily Herskovitz of the U.S. EPA and the M&E representatives met to discuss sampling plans and locations.

It was decided that the two soil samples and the composite sample from the HF Alkylation unit would be collected on 11-17-87. Composite water and sludge samples from the API separator would be collected 3 times during the day on 11-17-87 and 11-19-87 and twice on 11-18-87.

2.2 Field Investigation

2.2.1 Surface Water Samples

Three composite surface water samples were collected on November 17, 1987. Two composite water samples were collected from the API separator and one was from the HF Alkylation unit. Two composite water samples were collected from the API separator on November 18 and November 19, 1987. All of the composite water samples were collected by lowering a long handled PVC ladle or a collection bottle into the tanks to collect a sample. The water was then poured into the sample collection bottles. Each sample collection was only partially filled at each collection time. Therefore, at the end of the sampling day, the sample bottle contained a composite sample. The volatile sample bottles were filled at the end of the day from a composite sample bottle.

A field blank was collected on November 19, 1987, by filling sample collection bottles with distilled water.

The water sample at the HF Alkylation Unit submitted for full HSL organics analysis only. The other water samples were submitted for full HSL organics, TSS, sulfides, oil and grease and EP Toxicity metals analysis. The oil and grease samples were preserved with sulfuric acid at pH 2. The sulfide samples were preserved with 40 drops of 2N zinc acetate and sodium hydroxide at pH 9. The pH of the samples was checked with pH paper. Lead acetate paper test strips were used to check for sulfides. All water samples were iced to $4^{0}C$. The PVC ladle was decontaminated after each sample collection. Equipment decontamination consisted of an Alconox soap wash, a distilled water rinse and an isopropanol rinse. All equipment was allowed to air dry.

2.2.2. Soil/ Sediment Samples

Two onsite composite soil samples were collected on November 17, 1987. These were collected by tank 10-6 and tank R-16. These samples were collected from 0-6 inch depths using a stainless steel spoon and a stainless steel pan. The composite sample was placed into the sample collection jars. The soils were submitted for routine analytical services (RAS) organics and inorganics analyses.

Two composite sludge samples were collected on each day. These were collected by lowering a long-handle ladle into the tanks and collecting a sludge sample. The sample collection jars were only partially filled at each collection time. Therefore, at the end of the sampling day, the sample bottle contained a composite sample. The composite sludge sample were submitted for EP Toxicity metals analysis.

All equipment used in sample collection was decontaminated after each use. Equipment decontamination consisted of an Alconox soap wash, a distilled water rinse and an isopropanol rinse. All equipment was allowed to air dry.

Table 1

Sample Locations

Station	Description
S43	Soil 1, located 20 ft. northwest of tank 10-6, 0-6 in. depth.
S44	Soil 2, located 15 ft. north of tank R-16, 0-6 in. depth.
S45	Caustic Tank surface water, 11-17-87
S46	Field Blank
S47	API Separator Influent tank surface water, 11-17-87
S48	API Separator Return flow pit surface water, 11-17-87
S49	API Separator Influent Tank surface water, 11-18-87
S50	API Separator Return flow pit surface water, 11-18-87
S51	API Separator Influent tank surface water, 11-19-87
S52	API Separator Return flow pit surface water, 11-19-87
S53	API Separator Return flow pit bottom sludge, 11-17-87
S54	API Separator Bottom Sludge, 11-17-87
S55	API Separator Return flow pit bottom sludge, 11-18-87
S56	API Separator Bottom Sludge, 11-18-87
S57	API Separator Return flow pit bottom sludge, 11-19-87
S58	API Separator Bottom Sludge, 11-19-87

LEGEND OF SAMPLE LOCATIONS

1 API SEPARATOR INFLUENT TANK SURFACE WATER

S 47 S 49 S 51

2 API SEPARATOR BOTTOM SLUDGE

S 54 S 56 S 58

3 API SEPARATOR RETURN FLOW PIT BOTTOM SLUDGE

S 53 S 55 S 57

AND SURFACE WATER

S 48 S 50 S 52

4 CAUSTIC TANK SURFACE WATER S 45

5 SOIL 1 S 43

6 SOIL 2 S 44

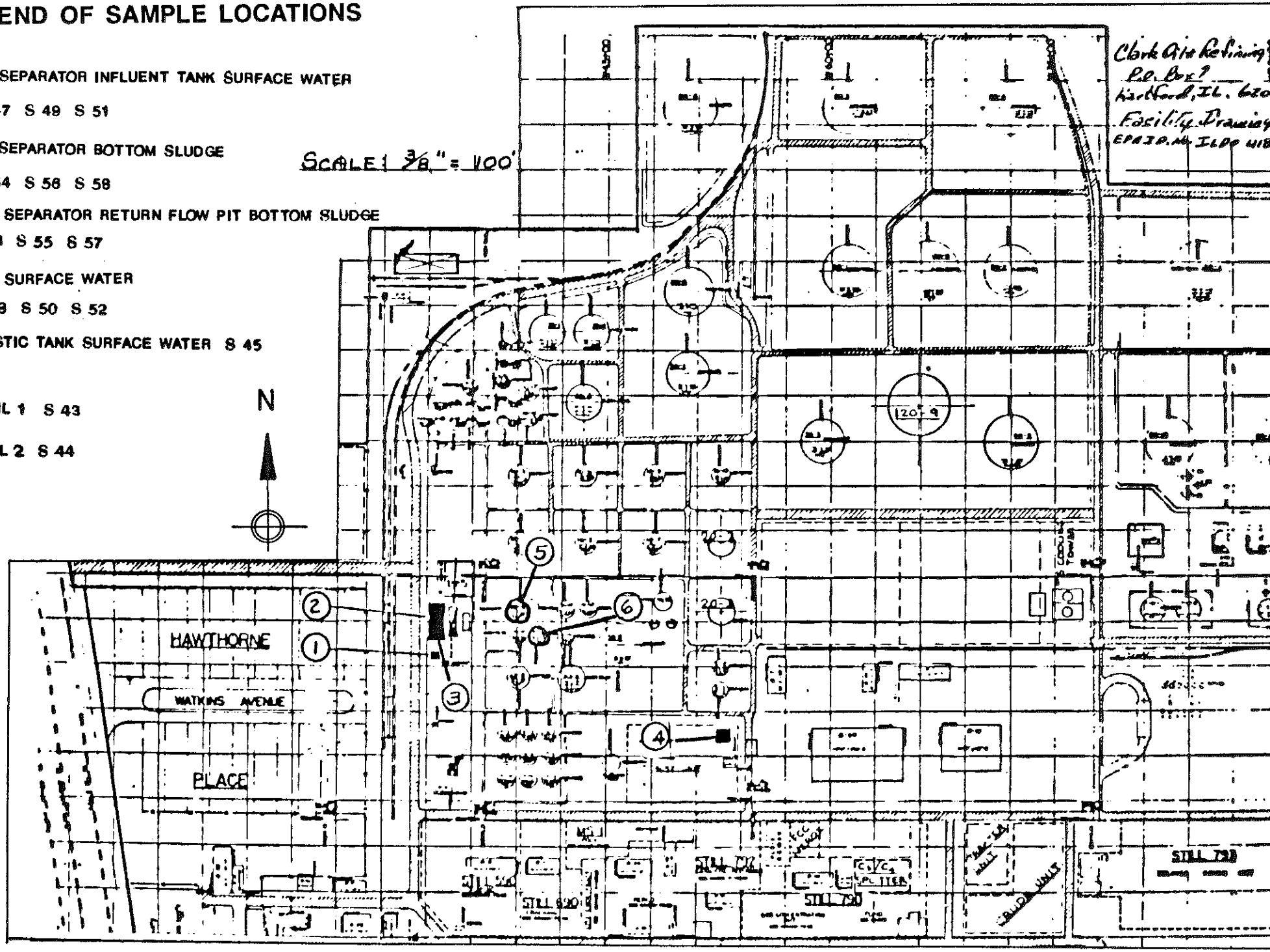


FIGURE 1 – SAMPLING LOCATIONS SOURCE: U.S.EPA

APPENDIX A

Field Log Sheets

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: Soil 1, collected 20 feet northwest of tank 10-6.

Field Sample Number: S43

Purpose of Sampling: To check for spills around slop oil tanks.

Type of Waste:

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Used stainless steel spoon to collect composite soil sample from 0-6" depth. Sample was composited in a stainless steel pan.

Date and Time of Collection: 11-17-87; 1315 hrs.

Results of any Field Measurements Made: HNu reading: 0 ppm

Observations and Comments: Soil was saturated with oil. Samples were split with Clark Oil representatives. U.S. EPA samples were shipped to CLP labs on 11-19-87. Requested analysis for RAS organics and inorganics.

NAME (Printed): Judy Wingo

Signature:

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: Soil 2, collected 15 feet north of tank R-16, in drainage channel between tank SS-2 and tank R-16.

Field Sample Number: S44

Purpose of Sampling: To check for spills around slop oil tanks.

Type of Waste:

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Used stainless steel spoon to collect composite soil sample from 0-3" depth. Sample was composited in a stainless steel pan.

Date and Time of Collection: 11-17-87; 1330 hrs.

Results of any Field Measurements Made: HNu reading: 0 ppm

Observations and Comments: Soil was saturated with oil. Samples were split with Clark Oil representatives. U.S. EPA samples were shipped to CLP labs on 11-19-87. Requested analysis for RAS organics and inorganics.

NAME (Printed): Judy Wingo

Signature:

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: HF Alkylation unit, also referred to as the caustic tank.

Field Sample Number: S45

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge-K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known): Low pH, spent acid.

Sampling Methodology: Collected sample from the tank using a PVC ladle.

Date and Time of Collection: 11-17-87; 1245 hrs.

Results of any Field Measurements Made: HNu reading: 0 ppm; pH measurements: 11-17-87, 1245 hrs: pH=1, 1610 hrs: pH=12, 1825 hrs: pH=12; 11-18-87, 0850 hrs: pH=13, 1740 hrs: pH=13; 11-19-87, 0915 hrs: pH=13, 1425 hrs: pH=13, 1735 hrs: pH=13.

Observations and Comments: Samples were split with Clark Oil representatives. U.S. EPA samples were sent to CLP labs on 11-19-87. Requested analysis for full HSL organics.

NAME (Printed): Judy Wingo

Signature: _____

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: Field Blank, collected near API separator tank.

Field Sample Number: S46

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge - K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Filled sample bottles with distilled water. The field blank was preserved in the same manner as the samples.

Date and Time of Collection: 11-19-87; 1700 hrs.

Results of any Field Measurements Made:

Observations and Comments: This sample was not split with Clark Oil representatives. U.S. EPA samples were shipped to CLP labs. Requested analysis for full HSL organics, oil and grease, sulfides, TSS and EP Toxicity. Oil and grease sample was preserved with H_2SO_4 to pH $<$ 2, sample was preserved with 2N zinc acetate and NaOH to pH $>$ 9.

NAME (Printed): Judy Wingo

Signature:

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: API separator influent, 11-17-87, collected at API separator influent tank.

Field Sample Number: S47

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge - K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Used metal grate cage to lower collection bottle into tank, then poured the sample into sample bottles. The bottles were filled to 1/3 of their capacity three times during the day. The composite sample was collected at 1115, 1515 and 1745 hrs.

Date and Time of Collection: 11-17-87; 1115, 1515 and 1745 hrs.

Results of any Field Measurements Made: HNu readings varied with the wind from background levels to 150 ppm. pH = 6. Lead acetate paper test was negative.

Observations and Comments: Samples were split with Clark Oil representatives. U.S. EPA samples were shipped to CLP labs. Requested analysis for full HSL organics, oil and grease, sulfides, TSS and EP Toxicity. Oil and grease sample was preserved with H_2SO_4 to pH $<$ 2. Sulfide sample was preserved with 2N zinc acetate and NaOH to pH $>$ 9.

NAME (Printed): Judy Wingo

Signature:

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: API separator return flow, 11-17-87, collected from API separator return pit.

Field Sample Number: S48

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge - K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Used PVC ladle to collect the sample from the inflow pipe, and then the sample was poured into the sample bottles. The bottles were filled to 1/3 of their capacity, three times during the day. The composite sample was collected at 1200, 1530 and 1800 hrs.

Date and Time of Collection: 11-17-87; 1200, 1530 and 1800 hrs.

Results of any Field Measurements Made: HNu readings varied from background levels to 100 ppm. Lead acetate paper test was negative. pH = 5.

Observations and Comments: Samples were split with Clark Oil representatives. U.S. EPA samples were shipped to CLP labs. Requested analysis for full HSL, oil and grease, sulfides, TSS and EP Toxicity. Oil and grease sample was preserved with H_2SO_4 to pH $<$ 2. Sulfide sample was preserved with 2N zinc acetate and NaOH to pH $>$ 9.

NAME (Printed): Judy Wingo

Signature:

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: API separator influent, 11-18-87, collected at API separator influent tank.

Field Sample Number: S49

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge - K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Used metal grate cage to lower collection bottle into tank then poured the sample into sample bottles. The bottles were filled to 1/2 of their capacity two times during the day. The composite sample was collected at 0810 and 1715 hrs.

Date and Time of Collection: 11-18-87; 0810 and 1715 hrs.

Results of any Field Measurements Made: HNu reading: 100 ppm. Lead acetate paper test was negative. pH = 4.

Observations and Comments: Samples were split with Clark Oil representatives. U.S. EPA samples were shipped to CLP labs. Requested analysis for oil and grease, sulfides, TSS and EP Toxicity. The oil and grease samples were preserved with H_2SO_4 to pH < 2. The sulfide sample was preserved with 2N zinc acetate and N_aOH to pH > 9.

NAME (Printed): Judy Wingo

Signature:

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: API separator return flow, 11-18-87, collected from API separator return flow pit.

Field Sample Number: S50

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge - K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Used PVC ladle to collect the sample from the inflow pipe and then the sample was poured into the sample bottles. The bottles were filled to 1/2 of their capacity, two times during the day. The composite sample was collected at 0820 and 1725 hrs.

Date and Time of Collection: 11-18-87; 0810 and 1725 hrs.

Results of any Field Measurements Made: HNu reading: 1 ppm. Lead acetate paper test was negative. pH = 5.

Observations and Comments: Samples were split with Clark Oil representatives. U.S. EPA samples were shipped to CLP labs. Requested analysis for oil and grease, sulfides, TSS and EP Toxicity. The oil and grease sample was preserved with H_2SO_4 to pH < 2. The sulfide sample was preserved with 2N zinc acetate and N_aOH to pH > 9. Samples were shipped on 11-19-87 and 11-20-87.

NAME (Printed): Judy Wingo

Signature:

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: API separator influent, 11-19-87, collected at API separator influent tank.

Field Sample Number: S51

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge - K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Used metal grate cage to lower collection bottle into tank then poured the sample into sample bottles. The bottles were filled to 1/3 of their capacity three times during the day. The composite sample was collected at 0845, 1355 and 1700 hrs.

Date and Time of Collection: 11-19-87; 0845, 1355 and 1700 hrs.

Results of any Field Measurements Made: Lead acetate paper test was negative. pH = 3.

Observations and Comments: Samples were split with Clark Oil representatives. U.S. EPA samples were shipped to CLP labs. Requested analysis for full HSL organics. Samples were preserved at 4°C. Samples were shipped on 11-19-87.

NAME (Printed): Judy Wingo

Signature:

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: API separator return flow, 11-19-87, collected from API separator return flow pit.

Field Sample Number: S52

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge - K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Used PVC ladle to collect the sample from the inflow pipe and then the sample was poured into the sample bottles. The bottles were filled to 1/3 of their capacity three times during the day. The composite sample was collected at 0855, 1400 and 1710 hrs.

Date and Time of Collection: 11-19-87; 0855, 1400 and 1710 hrs.

Results of any Field Measurements Made: Lead acetate paper test was negative. pH=5.

Observations and Comments: Samples were split with Clark Oil representatives. U.S. EPA samples were shipped to CLP labs on 11-19-87 and 11-20-87. Requested analysis for full HSL organics, oil and grease, sulfides, TSS amd EP Toxicity. The oil and grease sample was preserved with H_2SO_4 to pH $<$ 2. The sulfide sample was preserved with 2N zinc acetate and NaOH to pH $>$ 9.

NAME (Printed): Judy Wingo

Signature:

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: Pit sludge, 11-17-87, collected at the API separator return flow pit.

Field Sample Number: S53

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge - K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Sample collected from bottom of pit using a long handled PVC ladle. Sample was poured directly from the ladle into the sample jar. The bottle was filled to 1/3 of its capacity three times during the day. The composite sample was collected at 1230, 1535 and 1805 hrs.

Date and Time of Collection: 11-17-87; 1230, 1535, 1805 hrs.

Results of any Field Measurements Made:

Observations and Comments: Split samples with Clark Oil representatives. U.S. EPA sample was shipped on 11-19-87 to Region V CRL. Requested analysis for EP Toxicity.

NAME (Printed): Judy Wingo

Signature:

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: API separator sludge, 11-17-87, collected from API separator.

Field Sample Number: S54

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge - K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Sludge sample collected from bottom of pit using a long handled PVC ladle. Sample poured directly from ladle into sample jar. The bottle was filled to 1/3 of its capacity three times during the day. The composite sample was collected at 1215, 1545 and 1815 hrs.

Date and Time of Collection: 11-17-87; 1215, 1545, 1815 hrs.

Results of any Field Measurements Made:

Observations and Comments: Sample split with Clark Oil representative. U.S. EPA sample shipped to Region V CRL on 11-19-87. Requested analysis for EP Toxicity.

NAME (Printed): Judy Wingo

Signature:

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: Pit sludge, 11-18-87, collected at the API return flow pit.

Field Sample Number: S55

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge - K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Sample was collected from bottom of pit using a long handled PVC ladle. The sample was poured directly from the ladle into the sample jar. The bottle was filled to 1/2 of its capacity two times during the day. The composite sample was collected at 0830 and 1730 hrs.

Date and Time of Collection: 11-18-87, 0830 and 1230 hrs.

Results of any Field Measurements Made:

Observations and Comments: Sample split with Clark Oil representatives. U.S. EPA samples were shipped to Region V CRL on 11-19-87. Requested analysis for EP Toxicity.

NAME (Printed): Judy Wingo

Signature:

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: API separator sludge, 11-18-87, collected from API separator.

Field Sample Number: S56

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge - K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Sludge sample collected from bottom of pit using a long handled PVC ladle. The sample was poured directly into sample jar. The bottle was filled to 1/2 of its capacity two times during the day. The composite sample was collected at 0840 and 1735 hrs.

Date and Time of Collection: 11-18-87; 0840 and 1735 hrs.

Results of any Field Measurements Made:

Observations and Comments: Sample was split with Clark Oil representatives. U.S. EPA samples were shipped to Region V CRL on 11-19-87. Requested analysis for EP Toxicity.

NAME (Printed): Judy Wingo

Signature:

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: Pit sludge, 11-19-87, collected at the API return flow pit.

Field Sample Number: S57

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge - K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known): ____

Sampling Methodology: Sample was collected from bottom of pit using a long handled PVC ladle. The sample was poured directly from the ladle into the sample jar. The bottle was filled to 1/3 of its capacity three times during the day. The composite sample was collected at 0900, 1405 and 1720 hrs.

Date and Time of Collection: 11-19-87; 0900, 1405 and 1720 hrs.

Results of any Field Measurements Made: ____

Observations and Comments: Sample split with Clark Oil representatives. U.S. EPA samples were shipped to Region V CRL on 11-19-87. Requested analysis for EP Toxicity.

NAME (Printed): Judy Wingo

Signature: ____

FIELD LOG SHEET

Facility Name: Clark Oil, Wood River Refinery

Facility Address: Route 3, P.O. Box 7, Hartford, Illinois

Location and Description of Sampling Point: API separator sludge, 11-19-87, collected from API separator.

Field Sample Number: S58

Purpose of Sampling: To determine if the return water to the API separator and the spent acid in the HF Alkylation unit are hazardous wastes that require a RCRA permit.

Type of Waste: API separator sludge - K051, DAF float - K049 and leaded tank bottoms - K052.

Process (if known) Producing Waste: Oil Refining

Suspected Composition, Including Concentrations (if known):

Sampling Methodology: Sludge sample collected from bottom of pit using long handled PVC ladle. The sample was poured directly into sample jar. The bottle was filled to 1/3 of its capacity three times during the day. The composite sample was collected at 0910, 1415 and 1725 hrs.

Date and Time of Collection: 11-19-87; 0910, 1415 and 1725 hrs.

Results of any Field Measurements Made:

Observations and Comments: Sample was split with Clark Oil representatives. U.S. EPA samples were shipped to Region V CRL on 11-19-87. Requested analysis for EP Toxicity.

NAME (Printed): Judy Wingo

Signature:

APPENDIX B

Chain of Custody Forms

ENV NMENTAL PROTECTION AGENCY
Office of Enforcement

EGION 5
230 South Dearborn Street
Chicago, Illinois 60604

CHAIN OF CUSTODY RECORD

PROJ. NO. 88JG01 | PROJECT NAME Clark Oil

SAMPLERS: (Signature) Judy Shafer / R. Schaefer . J. Wingo

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Extractables	VOA	Pesticides	Priority Pollutants			REMARKS OTR #	TAG #
													CASE # ~~4529~~ ~~4522~~ 8521	
S47	11-17-87	1115	X		API Separator Influent, 11-17-87	2-80z	X		X	X			EP728	5-110297 & 5-110298
"	"		X		" "	2-40ml		X					EP728	5-110299 & 5-110300
S48	11-17-87	1200	X		API Sep. Return Flow, 11-17-87	2-80z	X		X	X			EP729	5-110306 & 5-110307
"	"		X		" "	2-40ml		X					EP729	5-110308 & 5-110309
S45	11-17-87	1245	X		Caustic Tank, Influent	2-80z	X						EP727	5-110283 & 5-110284
"	"		X		"	2-40ml		X					EP727	5-110285 & 5-110286
S43	11-17-87	1315	X		Soil 1	1-80z	X						EP725	5-110272
"	"		X		"	1-40z		X					EP725	5-110273 & 5-110274
S44	11-17-87	1330	X		Soil 2	1-80z	X						EP726	5-110276 & 5-110277
"	"		X		"	1-40z		X					EP726	5-110278, 5-110279, 5-110280 & 5-110281

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Judy L. Wingo	11-19-87 1100				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				FEDERAL EXPRESS AIRBILL # 493370662 21 SHIPPED TO S-CUBED CUSTODY SEAL # S 11532 [illegible]	

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

5- 00077

ENVI. MENTAL PROTECTION AGENCY
Office of Enforcement

GION 5
230 South Dearborn Street
Chicago, Illinois 60604

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
8856A	Clark Oil

Case # 8521
SAS # 3478-E

SAMPLERS: (Signature) Judy Wengo, BS

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	EP TOX	Tag #	REMARKS
S47	11-17-87	~~1245~~ 1115	X		API Sep. Influent	1-80oz	X	110304	
S48	"	1200	X		API Sep. Return Flow	1-80oz	X	110313	
S49	11-18-87	810	X		API. Sep. Influent	"	X	110317	
S50	11-18-87	820	X		API Sep. Return Flow	"	X	110323	
S52	11-18-87	855	X		API Sep. Return Flow	"	X	110335	
S46	"	1700		X	Field Blank	"	X	110358	
S53	11-17-87	1230	X		Pit Sludge	1-8oz	X	110344	
S54	"	1215	X		API Sep. Sludge	"	X	110345	
S55	11-18-87	830	X		Pit Sludge	"	X	110346	
S56	"	840	X		API Sep. Sludge	"	X	110347	
S57	11-18-87	900	X		Pit Sludge	"	X	110348	
S58	"	910	X		API Sep. Sludge	"	X	110349	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Judy D. Wengo	11-19-87 2200				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Fed. Express Airbill # 5437172241 Shipped to: USEPA Reg. II CR-Lab Custody Seal #'s 11529 - 09	

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

5- 00096

ENVI[illegible]MENTAL PROTECTION AGENCY
Office of Enforcement

REGION 5
230 South Dearborn Street
Chicago, Illinois 60604

CHAIN OF CUSTODY RECORD

CASE # 4521

PROJ. NO.	PROJECT NAME
88JG01	Clark Oil

SAMPLERS: (Signature) Don Schafer, J. Wingo, B.S.

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	EXTRACTABLES	VOA	Priority Pollutant	Pesticides/PCB			REMARKS OTR #	REMARKS TAG #
S51	11-19-87	845	X		API Sep. Influent 11-19-87	2-80oz	X		X	X			EP732	5-110324 5-110325
"	"	"	X		" "	2-40ml		X					EP732	5-110326 5-110327
S52	"	855	X		API Separator Return Flow, 11-19-87	2-80oz	X		X	X			EP730	5-110328 5-110329
"	"	"	X		" "	2-80oz	X		X	X			"	5-110335 5-110337
"	"	"	X		" "	2-80oz	X		X	X			"	5-110338 5-110339
"	"	"	X		" "	2-40ml		X					"	5-110330 5-110331
"	"	"	X		" "	2-40ml		X					"	5-110340 5-110341
"	"	"	X		" "	2-40ml		X					"	5-110342 5-110343
S46	"	1700		X	Field Blank	2-80oz	X		X	X			EP731	5-110350 5-110352
"	"	"		X	" "	2-40ml		X					"	5-110353 5-110354

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Judy D. Wingo	11-19-87 2200				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				FEDERAL EXPRESS AIRBILL # 4215602381 SHIPPED TO S-CUBED CUSTODY SEAL # S 11520 11521	

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

5- 00085

ENVI NMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 5
230 South Dearborn Street
Chicago, Illinois 60604

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
88JG01	Clark Oil

SAMPLERS: (Signature) Dan Schafer, Judy Wingo/R. Schroeder

CASE # 8521

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	METALS	CYANIDE					REMARKS: TR #	REMARKS: TAG #
543	11-17-87	1315	X		Soil 1	1-8oz	X	X					MEP346	5-110275
543	11-17-87	1315	X		Soil 2	1-8oz	X	X					MEP347	5-110282

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Judy D. Wingo	11-19-87 1100				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
				FEDERAL EXPRESS AIR BILL # 5081794896 SHIP TO NORTHERN LABS	

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

5-00093

ENV JNMENTAL PROTECTION AGENCY
Office of Enforcement

EGION 5
230 South Dearborn Street
Chicago, Illinois 60604

CHAIN OF CUSTODY RECORD

SAS # 3478-E

PROJ. NO.	PROJECT NAME
88JG01	Clark Oil

SAMPLERS: (Signature) Judy D. Wengo, BS

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Oil + Grease	TSS	Sulfates				REMARKS Tag #
547	11-17-87	1115	X		API Separator Influent	1-80oz	X						5-110301
"	"	"	X		" "	1-1ℓ		X					110303
"	"	"	X		" "	1-1ℓ			X				110302
548	"	1200	X		API Sep. Return Flow	1-80oz	X						110310
"	"	"	X		" "	1-1ℓ		X					110312
"	"	"	X		" "	1-1ℓ			X				110311
549	11-18-87	810	X		API Separator Influent	1-80oz	X						110314
"	"	"	X		" "	1-1ℓ		X					110316
"	"	"	X		" "	1-1ℓ			X				110315
550	"	820	X		API Sep Return Flow	1-80oz	X						110319
"	"	"	X		" "	1-1ℓ		X					110321
"	"	"	X		" "	1-1ℓ			X				110320
552	11-19-87	855	X		" "	1-80oz	X						110332
"	"	"	X		" "	1-1ℓ		X					110334
"	"	"	X		" "	1-1ℓ			X				110333

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Judy D. Wengo	11-20-87 1600				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Federal Exp. Airbill # 5437172226 Shipped to: Centec. Custody Seal #'s: 11[illegible]	

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

5-00095

Page 2 of 2

ENVI NMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 5
230 S. Dearborn Street
Chicago, Illinois 60604

CHAIN OF CUSTODY RECORD

SAS# 3478-E

PROJ. NO.	PROJECT NAME
88J601	Clark Oil

SAMPLERS: (Signature) Judy Wingo, BS

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Oil + Grease	TSS	Sulfides				REMARKS
													Tag #
S46	11/19/87	1700		X	Field Blank	1-8oz	X						110355
"	"	"		X	" "	1-1l		X					110357
"	"	"		X	" "	1-1l			X				110356
					END OF SHIPMENT								

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Judy D Wingo	11-20-87 1600				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
					Federal Exp. Airbill # 5437172226 Ship to: Centec Custody Seal #'s: 1165, 1167

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

5- 00097

APPENDIX C

Organic Traffic Reports

SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS-557-2490

CASE NO: | SAS NO. (IF APPLICABLE)

ORGANIC TRAFFIC REPORT
(FOR CLP USE ONLY)

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA SI ESI RIFS RD RA ER NPLD O&M OTHER ____
NON-SUPERFUND— RFA PROGRAM

SITE NAME: CLARK OIL

CITY, STATE: HARTFORD IL | SITE SPILL ID:

REGION NO: V | SAMPLING COMPANY ② METCALF & EDDY

SAMPLER: (NAME) JUDY WINGO

SHIP TO: ③
S-CUBED
3398 CARMEL MTN. RD
SAN DIEGO, CA 92121
ATTN: ELAINE WALTERS

SAMPLING DATE: ④
BEGIN: 11-17-87 END: 11-19-87

DATE SHIPPED: 11-19-87 CARRIER: F ⑤

AIRBILL NO: 4215602381

SAMPLE DESCRIPTION ⑥
(ENTER IN BOX A)
1. SURFACE WATER
2. GROUND WATER
3. LEACHATE
4. SOIL
5. SEDIMENT
6. OIL (SAS)
7. WASTE (SAS)

TRIPLE VOLUME REQUIRED FOR MATRIX SPIKE/DUPLICATE AQUEOUS SAMPLE

SHIP MEDIUM AND HIGH CONCENTRATION SAMPLES IN PAINT CANS

SEE REVERSE FOR ADDITIONAL INSTRUCTIONS

CLP SAMPLE NUMBER (FROM LABELS)	Ⓐ SAMPLE DESCRIPTION (FROM BOX 1) 1 2 3 4 5 6 7	Ⓑ CONCENTRATION L = LOW/MED. H = HIGH (SAS)	Ⓒ RAS ANALYSIS: VOLATILE	BASE/NEUT /ACID	PESTICIDE /PCB's	Priority Pollutants	Ⓓ SPECIAL HANDLING	Ⓔ STATION LOCATION
EP 732	1	L	X	X	X	X		SS1 API Inf. 1179
EP 730	1	L	X	X	X	X		SS2 API Ref. Flow 11-19
EP 731	3	L	X	X	X	X	Blank	SS6 Field Blank

EPA Form 2075-7 (8-87)

WHITE — SMO COPY PINK — CLIENT COPY WHITE — LAB COPY FOR RETURN TO SMO YELLOW — LAB COPY

SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS-557-2490

CASE NO:

SAS NO: (IF APPLICABLE)

ORGANIC TRAFFIC REPORT

(FOR CLP USE ONLY)

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA SI ESI RIFS RD RA ER NPLD O&M OTHER ____
NON-SUPERFUND— RFA PROGRAM

SITE NAME: Clark Oil

CITY, STATE: Hartford, IL

SITE SPILL ID:

REGION NO: V

SAMPLING COMPANY ② Metcalf & Eddy

SAMPLER: (NAME) Judy Wingo

SHIP TO: ③
S-Cubed
3398 Carmel Mtn. Road
San Diego, CA 92121

ATTN: Elaine Walters

SAMPLING DATE: ④

BEGIN: 11-17-87 END: 11-17-87

DATE SHIPPED: 11-19-87 CARRIER: F ⑤

AIRBILL NO: 4933706621

SAMPLE DESCRIPTION ⑥ (ENTER IN BOX A)
1. SURFACE WATER
2. GROUND WATER
3. LEACHATE
4. SOIL
5. SEDIMENT
6. OIL (SAS)
7. WASTE (SAS)

TRIPLE VOLUME REQUIRED FOR MATRIX SPIKE/DUPLICATE AQUEOUS SAMPLE

SHIP MEDIUM AND HIGH CONCENTRATION SAMPLES IN PAINT CANS

SEE REVERSE FOR ADDITIONAL INSTRUCTIONS

CLP SAMPLE NUMBER (FROM LABELS)	Ⓐ SAMPLE DESCRIPTION (FROM BOX 1) 1 2 3 4 5 6 7	Ⓑ CONCENTRATION L = LOW/MED. H = HIGH (SAS)	Ⓒ RAS ANALYSIS: VOLATILE	BASE/NEUT /ACID	PESTICIDE /PCB's		Ⓓ SPECIAL HANDLING	Ⓔ STATION LOCATION
EP728	1	L	X	X	X			S47 API Inf. IWT
EP729	1	L	X	X	X			S48 API Ref. IWT
EP725	4	L	X	X				S43 Soil 1
EP726	4	L	X	X				S44 Soil 2
EP727	1	L	X	X				S45 Inf. Caustic Tank

EPA Form 2075-7 (8-87)

WHITE — SMO COPY PINK — CLIENT COPY WHITE — LAB COPY FOR RETURN TO SMO YELLOW — LAB COPY

APPENDIX D

SAS Packing Lists

U.S. ENVIRONMENTAL PROTECTION AGENCY
CLP Sample Management Office
P.O. Box 818 - Alexandria, Virginia 22313
Phone: 703/557-2490 - FTS/557-2490

SAS Number
3478-E

SPECIAL ANALYTICAL SERVICE

PACKING LIST

Sampling Office:	Sampling Date(s):	Ship To:	For Lab Use Only
V	11-17-87 to 11-19-87	Centec 2160 Industrial Drive Salem, VA 24153	Date Samples Rec'd:
Sampling Contact:	Date Shipped:		
Judy Wingo (name)	11-20-87		Received By:
	Site Name/Code:	Attn: Susan Shepard	
312-228-0900 (phone)	8521		

	Sample Numbers	Sample Description i.e., Analysis, Matrix, Concentration	Sample Condition on Receipt at Lab
1.	E01	88JG01547 API Separator Influent, 11-17-87	
2.	E02	88JG01548 API Separator Return Flow, 11-17-87	
3.	E03	88JG01549 API Separator Influent, 11-18-87	
4.	E04	88JG01550 API Separator Return Flow, 11-18-87	
5.	E05	88JG01552 API Separator Return Flow, 11-19-87	
6.	E06	88JG01546 Field Blank	
7.			
8.		The above water samples are being	
9.		submitted for Oil & Grease, TSS	
10.		and Sulfides analysis.	
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			

For Lab Use Only

White - SMO Copy, Yellow - Region Copy, Pink - Lab Copy for return to SMO, Gold - Lab Copy

U.S. ENVIRONMENTAL PROTECTION AGENCY
CLP Sample Management Office
P.O. Box 818 - Alexandria, Virginia 22313
Phone: 703/557-2490 - FTS/557-2490

SAS Number
3478-E

SPECIAL ANALYTICAL SERVICE

PACKING LIST

Sampling Office:	Sampling Date(s):	Ship To:	For Lab Use Only
V	11-17-87 to 11-19-87	U.S. EPA Region V Environmental Services Division, 10th Floor, CRL 536 S. Clark St. Chicago, IL 60605 Attn: Bill Sargent	Date Samples Rec'd:
Sampling Contact: Judy Wingo (name)	Date Shipped: 11-19-87		Received By:
312-228-0900 (phone)	Site Name/Code: 8521		

	Sample Numbers	Sample Description i.e., Analysis, Matrix, Concentration	Sample Condition on Receipt at Lab
1.	88JG01547	API Separator Influent, 11-17-87	
2.	88JG01548	API Separator Return Flow, 11-17-87	
3.	88JG01549	API Separator Influent, 11-18-87	
4.	88JG01550	API Separator Return Flow, 11-18-87	
5.	~~88JG01551~~	~~API Separator Influent, 11-19-87~~ g.w.	
6.	88JG01552	API Separator Return Flow, 11-19-87	
7.	88JG01546	~~The above~~ Field Blank. g.w.	
8.		The above water samples are being	
9.		analyzed for EP Toxicity	
10.			
11.	88JG01553	Pit Sludge 11-17-87	
12.	88JG01554	API Separator Sludge, 11-17-87	
13.	88JG01555	Pit Sludge 11-18-87	
14.	88JG01556	API Separator Sludge, 11-18-87	
15.	88JG01557	Pit Sludge 11-19-87	
16.	88JG01558	API Separator Sludge 11-19-87	
17.		The above Sludge samples are being	
18.		analyzed for EP Toxicity	
19.			
20.			

For Lab Use Only

White - SMO Copy, Yellow - Region Copy, Pink - Lab Copy for return to SMO, Gold - Lab Copy

Inorganic Traffic Reports

6-85

U.S. ENVIRONMENTAL PROTECTION AGENCY · HWI Sample Management Office
P.O. Box 818, Alexandria, VA 22313—703/557-2490 · FTS/557-2490

INORGANICS TRAFFIC REPORT

Sample Number
MEP 346

(1) **Case Number:** 8521
Sample Site Name/Code:
Clark Oil & Refining
88JE015433
Soil 1

(2) **SAMPLE CONCENTRATION**
(Check One)
X Low Concentration
___ Medium Concentration

(3) **SAMPLE MATRIX**
(Check One)
___ Water
X Soil/Sediment

(4) **Ship To:**
Northern Labs
2400 Cumberland Dr.
S. Valparaiso IN 46383
Attn: Paul Kovlowski

Transfer Ship To:

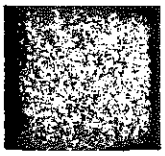
(5) **Sampling Office:** V
Sampling Personnel:
(Name) J. Wingo
(Phone) 312-238-0900
Sampling Date:
(Begin) 11-17-87 (End) 11-17-87

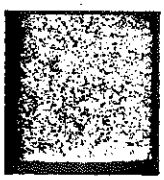
(6) **Shipping Information:**
Name Of Carrier:
Federal Express
Date Shipped: 11-19-87
Airbill Number: 5081794896

(7) **Sample Description:**
(Check One)
___ Surface Water
___ Ground Water
___ Leachate
___ Mixed Media
X Solids
___ Other ___
(specify)
MATCHES ORGANIC SAMPLE NO. EP725

(8) **Mark Volume Level On Sample Bottle**
Check Analysis required
X Total Metals
___ Cyanide

SMO COPY





6-85

U.S. ENVIRONMENTAL PROTECTION AGENCY · HWI Sample Management Office
P.O. Box 818, Alexandria, VA 22313 – 703/557-2490 · FTS/557-2490

INORGANICS TRAFFIC REPORT

Sample Number
MEP 347

(1) **Case Number:** 8521
Sample Site Name/Code:
Clark Oil & Refining
88J0015481
Soil 2

(2) **SAMPLE CONCENTRATION**
(Check One)
X Low Concentration
___ Medium Concentration

(3) **SAMPLE MATRIX**
(Check One)
___ Water
X Soil/Sediment

(4) **Ship To:**
Northern Labs
2400 Cumberland Drive
S Valparaiso, IN 46383
Attn: Paul Kovlowski

Transfer Ship To:

(5) **Sampling Office:** V

Sampling Personnel:
(Name) Judy Wingo
(Phone) 312-228-0900
Sampling Date:
(Begin) 11-17-87 (End) 11-17-87

(6) **Shipping Information:**
Name Of Carrier: Federal Express
Date Shipped: 11-19-87
Airbill Number: 508179489 6

(7) **Sample Description:**
(Check One)
___ Surface Water
___ Ground Water
___ Leachate
___ Mixed Media
X Solids
___ Other ___
(specify)
MATCHES ORGANIC SAMPLE NO. EP726

(8) **Mark Volume Level On Sample Bottle**
Check Analysis required
X Total Metals
___ Cyanide

SMO COPY